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# *The* MEDICAL CAREER

by

HARVEY CUSHING

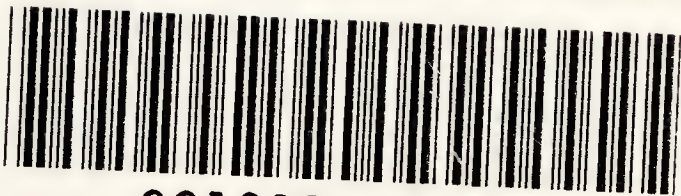
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## THE MEDICAL CAREER







# THE MEDICAL CAREER

AND OTHER PAPERS

*By*

HARVEY CUSHING

*Author of "From a Surgeon's Journal,"  
"Consecratio Medici," etc.*



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## PREFACE

THE present collection of essays and biographical appreciations was selected for publication by Dr. Cushing and the Editor of the Atlantic Monthly Press during the past summer, and the individual pieces were edited and passed for press by the author prior to his death on October 7, 1939. Save for "Haller and His Native Town" — Dr. Cushing's first literary venture — and his obituaries of Halsted and Rhodes, the essays included herein have all appeared since the publication in 1928 of *Consecratio Medici*, to which the present collection will form a companion volume.

The executors wish to express their gratitude to the Atlantic Monthly Press for its lively interest in the volume and for observing certain of Dr. Cushing's preferences of spelling and literary form which were contrary to its "house" style — especially for permitting direct quotations from English authors to appear in their original form.

J. F. F.

NEW HAVEN,  
*December 10, 1939*





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# THE MEDICAL CAREER



# I

## THE MEDICAL CAREER

AN invitation to renew my acquaintance with your picturesque and historic Hanover was welcome in spite of misgivings lest I should fail to do justice to my allotted topic in this series of lectures. In view of the peculiarly intimate nature of their vocation, practitioners of Medicine, except among their own kind, are traditionally close-mouthed; and since one cannot properly speak of his profession in public without praising it, doctors are inclined to dodge that embarrassing task, preferring to let the amazing developments in Medicine during the past fifty years speak for themselves. What is more, responsibility is added to embarrassment, by Professor Vernon's expressed hope that what I may have to say will produce from among you some good physicians and repel some incapable ones. There is, in reality, little to be said, other than that Medicine has become so many-sided that anyone with a good head, a good heart, or skillful hands, who is possessed of a spirit of service, who is not afraid of hard work, and who will be satisfied with a modest income, will find ample opportunity for happiness and for the exercise of his talents; and this is doubtless true no less of other vocations.

The ideals of the profession are no different from what they were when, four centuries before the birth of Christ,

*Address given at Dartmouth College, November 20, 1928.*



that somewhat mythical personage whom we venerate as the Father of Medicine wrote those celebrated passages that constitute a professional creed still publicly subscribed to by students on the day of their graduation in many medical schools — and should be in all. Though himself a priest-physician, Hippocrates was the first clearly to point out that, however diseases were to be regarded from the religious point of view, they must be scientifically treated as subject to natural laws. So you will see that Medicine has an unbroken continuity of tradition exceeding that of Christianity, and even when Hippocrates wrote he mentioned the Art of the physician as one “respected by all men in all time.”

The ideals and standards of the profession having been the same these past two thousand years and more, the difficulties of living up to them are, it may be assumed, no greater now than they ever have been. And, so far as concerns the intrinsic difficulties of actual practice of the Art, it may well enough be argued that they grow increasingly less now that instruments of precision come to replace the cruder, old-time methods of observation of the patient's symptoms, many of which can now be estimated and recorded with some approach to mathematical accuracy.

Medicine, in short, becomes constantly more exact and scientific in its procedures. It is prompt to adopt for its own uses new knowledge of most varied kinds that comes from the chemist, the physicist, and the biologist, whose primary motive is the extension of knowledge and who admit little if any interest in the application of their discoveries by the medical profession. Röntgen could hardly have dreamed that his discovery would revolutionize our methods of diagnosis; the Curies that radium would prove to be an effective agent in combating certain kinds of

malignant tumors; or Faraday that his alternating current would some day be utilized in place of the scalpel to make dissection a relatively bloodless procedure.

You will see, then, that a distinction is drawn between the Art and the Science of Medicine. The Art in its Hippocratic sense has reference among other things to the practising doctor's ability to inspire confidence in his patients and their relatives. This requires on his part an understanding of human nature, abounding unselfishness, unflagging sympathy, and observance of the Golden Rule. It calls for the exercise of that sort of benevolent common sense in the handling of many domestic problems, not always actually relating to ill health, which so often makes the general practitioner an indispensable "familiar" in those households that have learned to accept him as trusted confidant and adviser.

There is a charming book, *The Corner of Harley Street*, which I can recommend to you for the picture it gives of a fictitious doctor, Peter Harding, and his friends. In writing to a young man just entering practice he describes the general practitioners as not only the pillars but the pinnacles of the profession, "though the wreaths and the knighthoods seldom come their way." And he continues: —

In all the hundred extraneous interests that are involved, his (the G. P.'s) advice becomes of paramount importance. This would be the best room for the patient from the point of view of quietness and aspect. But that, on the other hand, is the room that he has been used to. His favourite books and pictures surround him there in the old accustomed order. Does the doctor think it better for him to be moved? His wife, his mother, or his sister are anxious to nurse him. Are they strong enough or skilful enough? What is the doctor's opinion on this point? Here is a telephone message from the office. A disturbing point has arisen in the

conduct of a great business, and should be dealt with promptly. Are we to worry the patient with it now, or postpone the settlement, with the possibilities of greater anxieties later on? Let us wait, at any rate, until the doctor comes.

And from this household he has to drive home by a private school where lies some boy with a cheerful countenance and a suspicious red rash on his chest. It would never do to create a false alarm. But, on the other hand, it would be more than disastrous to let the origin of some sweeping epidemic go free for convenience' sake. And here is a servant-maid in the surgery with a throat that looks as diphtheritic as a throat can well be; and she comes from a dairy farm that supplies half the town with milk, under the eyes of a government inspector; while the rector's wife, nervous, and uncomfortably near forty, is expecting her first, long-looked-for baby some time this afternoon.

The general practitioner may hold this sort of intimate and responsible relationship with a few families in a town or city, or his influence may spread over a large country district or be still more widely felt even than that. Wilfred Grenfell as the doctor of the Labrador may be mentioned as one in whom the Art is exemplified at its best; and the same qualities that have enabled him to salvage the souls and bodies of the stray dwellers on that dour coast, by teaching them how spiritually and economically and physically their condition could be improved, exist in countless other Grenfells in smaller and less picturesque fields of work, unnoticed, though perhaps at your very door, who no less perfectly understand and practise the Art of Medicine.

To see that people live proper lives, take proper exercise, eat proper food in the right way and at the right time, and learn to avoid the many occupational maladies to which they are prone; to improve health and prolong life and incidentally to care for the inevitable minor disorders and accidents that strew the way of life, would give



occupation for more doctors than our existent schools can possibly provide. But not all of us, alas, are endowed with those personal qualities which ensure success as practitioners.

And of what does the Science of Medicine consist as distinguished from the Art of Practice? Those of you who have been inquiring about these things will have learned that a certain familiarity with what are called the pre-medical sciences will be expected of you before you will be acceptable as a matriculant in the medical schools of the better grade. The particular reason for this is to give you a running start in the fundamentals of biology, of physics, and particularly of chemistry. I am not at all sure that this is wise or necessary or anything more than a passing fashion, for though it is probably good training for you to have to take educational hurdles, others more interesting than these and equally fundamental and useful for the future life of a doctor might well enough at your time of life be interposed in your course. But this heretical suggestion I need not here pursue. We can never foretell of what particular kind of knowledge we are going to be in need. No matter what our preparation, we are bound to have regrets that we were not made to study this or that subject more assiduously. We are forever going back to brush up on subjects hastily gone over or never touched upon at all until our interest was aroused when need for them became apparent.

It boils down to the fact that as our understanding of the processes of the body, both in health and in disease, in many respects becomes more exact and precise, scientific methods are increasingly called for as a means not only of advancing knowledge but of applying it. A thorough speaking acquaintance with the structure of the normal

human body, and with the disposition, form, and character of its tissues and organs acquired in the process of taking it apart by dissection, was about all, a generation or two ago, that was thought necessary as a scientific introduction to the study of medicine; and the teachers were for the most part at the same time practitioners of what they professed. Anatomy today has become a science which delves into the finest microscopic structure of the tissues and their development from the ovum through the embryo. So too the scientific study of function as something apart from structure engages the attention of physiologists in many diverging lines of work that call for chemical and mathematical and biophysical knowledge of a high order. Investigations of the biochemistry of the living tissues and secretions of the body in health and disease engage other groups of medical scientists. The laboratory has largely replaced the botanic garden once attached to every medical school as the source of its drugs; and the modern pharmacologist therefore tests and deals with the reactions of a countless number of new and synthetically prepared substances that gradually replace those our fathers of old painfully extracted from plants — as we still extract some that we cannot yet make, such as opium and digitalis and quinine.

Thus there comes to be a large group of workers engaged in the sciences that form the background for medicine whose ambition is to advance knowledge and whose discoveries do not necessarily have any immediate application or apparent bearing on medical practice. And as the medical sciences advance, they become divided and subdivided as special groups of people branch off into an intensive study of bacteriology, of immunity, of serology, of nutrition, of hygiene, and so on, each group with a vo-

cabulary and lingo of its own, a special journal of publication, and a special society at which its members meet to thrash out their own problems.

And if this is what inevitably happens in the medical sciences, no less does medical practice become split up into innumerable specialties in which one or another of us tends to engage, depending upon the influences, opportunities, and tastes which interpose themselves as we advance in our studies or life's work. The physician may come to particularize in the diseases pertaining to a special age, as of childhood; or to those pertaining to a certain system, like nervous diseases; or to diseases of the mind; or to those of the chest or abdomen or heart; or indeed devote his life almost wholly to the study of a single disease.

So a classmate of mine untold years ago was called upon to prepare a thesis on diabetes in our undergraduate course in physiology, and, his interest once aroused, he has never succeeded in dropping the subject; incidentally he is consulted by victims of the disease from all over the world and has contributed vastly to our knowledge of how it should be handled so as to prolong life. And yet a young man named Banting, wholly untrained in the subject, is suddenly obsessed with an idea regarding it, gives up a surgical practice in a small Canadian town, spends a summer at work on a few well-planned experiments on some dogs, and, with the aid of a second-year medical student who knows something of chemistry, discovers a substance, insulin, which many before him had looked for in vain, and which almost overnight completely revolutionized the treatment of diabetes.

And the surgeon, too, as knowledge of his craft expands so that it cannot well be compassed by a single person, gravitates into special lines of work, for his tastes and



opportunities may lead him into the surgery of particular organs or of particular parts of the body. He may excel in the treatment of fractures, the correction of deformities, the diseases of the eye, ear, nose, and throat, the surgical disorders of the chest or abdomen or pelvis — there is no end to it.

So there are among doctors the scientists who may never see a patient and the practitioners whose work is based on the knowledge that comes from the many scientific laboratories, and who indeed, if spurred by curiosity and given the proper training, may profitably engage in scientific research and medical practice at the same time, which is the ideal combination.

And should a student's tastes and interests disincline him from a career either in science or in practice, there is a third portal open for him that leads into public-health activities; for though it was once — and still is — the duty of the practising doctor to keep people well, the prevention of the spread of epidemics from district to district, from country to country, becomes too large a task for him and demands the attention of public officials trained in the knowledge of epidemiology with power to act in an emergency.

Formerly the general practitioner was expected to fulfil all of these functions as physician and surgeon and teacher and public-health official rolled into one — and those capable of it often managed to carry out valuable investigations in their spare moments. Thus, Harvey not only worked out the circulation of the blood but formulated the conception that all life springs from the ovum — he wasn't quite sure about angleworms. Thus, John Hunter, an untutored farmer boy from the valley of the Clyde, who rebelled at school, hated books, and lived in the open

fields studying animal life, subsequently as a London surgeon blazed a new trail into experimental and comparative physiology. Thus, Lister in a cubicle off his consulting room worked out the principles of antiseptic surgery that have banished sepsis.

But times have considerably changed, and the only doctors today that are called upon to act in the multiple capacity of practitioner, investigator, health official, and administrator are the medical officers in the army, navy, and marine corps. Walter Reed, a young army doctor, while stationed in Cuba after the Spanish War, determined by a series of experiments on soldiers who volunteered for the purpose that yellow fever was transmitted by the bite of a certain species of mosquito and only in this way. Gorgas, who profited by this knowledge to clear the Panama Zone of fever so the Canal might be built, was likewise an army officer. Leonard Wood was an army doctor first, and a soldier first and last; and though he became a great colonial administrator there was one thing above all others he had hoped to accomplish — the eradication of leprosy from the Philippines — and doubtless would have accomplished but for his untimely death.

We are apt to forget from what small beginnings or chance discoveries in science great movements begin. Let me give you a few examples: Sir William Perkin, the chemist, while studying the by-products of coal tar, accidentally hit upon a substance he called mauve, the first of the aniline dyes, which became so popular a color that its name has become associated with a long-skirted, social decade some of us remember. But the aniline dyes did for Medicine something more important than that. The relation of bacteria to infectious diseases was just begin-

ning to be understood, and it was found that micro-organisms had a particular affinity for one or another of these dyes. Thus it was that the tubercle bacillus, a rod-shaped organism too minute to be microscopically detected when unstained, came to be recognized, a discovery which has revolutionized our whole conception of the many chronic and suppurative inflammations of bones and joints, of lymph glands and skin, of thoracic and abdominal organs, that so puzzled our predecessors who spoke of glandular "strumas," of "white swellings" of joints, of pulmonary "consumption," of spinal "caries," and so on, unaware that they all had the same underlying cause. This was interesting and illuminating enough, but what was there to be done about it?

How could this protean disease be checked? Well, it was necessary to find out how people got infected; and through the efforts of workers all over the world, who added a bit of new knowledge here and a bit there, it was learned that cattle have tuberculosis and that milk gets infected, so that, for the protection particularly of children, herds providing community milk must be scrutinized and laws reluctantly passed by legislative bodies and no less reluctantly lived up to by the owners of the herds. But this is not the only manner of infection, for the organism may be inhaled with dust into the lungs and the disease get its start there, so that non-spitting ordinances are passed and other precautions taken. And meanwhile some farseeing persons like Trudeau, himself a victim of pulmonary tuberculosis, find that a life in the open air with exposure to the sun and good nourishing food are curative when the disease is recognized in time; and conversely that the life in crowded tenements is just as prejudicial to recovery. And so it is, with all this knowl-



edge slowly and painstakingly acquired, that a veritable world-wide crusade against the "white plague" has come to be waged, in which all engage, even those of you who do no more than stick a Red Cross stamp on your Christmas mail to show that you have contributed your bit toward the stamping out of this formidable disease.

It sounds quixotic that a profession should foment a crusade of this sort which obviously takes the bread and butter out of the mouths of those who practise it. But the doctor's impulse is primarily altruistic; he abhors disease and is impelled to conquer and prevent it in bulk, when he can, just as he does when it affects or threatens his individual patient. So tuberculosis is slowly but surely on the wane; and incidentally the importance to health of fresh air and sunshine and personal hygiene, which the doctor had long preached, becomes better understood.

Let me give some other examples. Malnutrition is a frequent and often serious cause of disease for obscure reasons slowly being unraveled. Scurvy, described as long ago as by Vasco da Gama, was once the common bane of long voyages when the sailors' food became reduced to the usual hardtack and salt pork. Many a naval expedition was abandoned because of its ravages. Evidently some element necessary for health was missing from the diet, and in the course of time experience showed that vegetables and fruits or even lime juice supplied the want. A malady known as beriberi used to prevail in the Orient and armies were devastated by it. In those countries rice is a common staple of food, and to make the rice palatable and attractive in appearance its husks were removed. But the husks contained an important food principle, as was found by experimentally restricting the diet of chickens to each kind of rice (polished and unpolished). Some un-



known element that is essential to the maintenance of health — a vitamin — proves to be contained in the husks of rice.

There is a disease called rickets that affects the growth of ill-nourished children brought up in unfavorable surroundings. Among other symptoms, their bones soften, become twisted and deformed. By trial and error with many substances, cod-liver oil was long ago found to be beneficial, and this nauseous substance used to be given to all rachitic and tuberculous children. It has been found, however, that sunshine, or even artificial sunshine by a quartz lamp, appears to be equally efficacious in curing rickets; also that when certain vegetable oils are treated by ultra-violet light they acquire a curative effect ("bottled sunshine") against rickets. They contain, in short, a substance known as vitamin D. You will perhaps have observed that a Dr. Windaus of Göttingen has just been given the Nobel Prize for the discovery of the nature of this substance.<sup>1</sup> Some twenty years ago he began to investigate stearin, which we know as cocoa butter. There is a form of stearin in the body cells known as cholesterin. He found that when cholesterin is subjected to ultra-violet rays vitamin D is produced; and that when this substance, in amounts so infinitesimally small as to be scarcely comprehensible, is injected into an animal affected with experimental rickets, a cure is miraculously brought about. All

<sup>1</sup> The story of the discovery of the vitamins, the steps that led up to it, and the difficulties in the way, is told in most readable fashion by McCollum and Simmonds in a volume entitled *Chemistry in Medicine*. In this volume, which has been prepared for the lay reader, will be found a series of chapters by eminent scientists on a great number of subjects, emphasis being laid on the service of Chemistry to Medicine. It is issued by the Chemical Foundation, Inc., N. Y., and cannot be too highly recommended.

this sounds brief in the recital; but it has been a labor to which countless persons in our country and elsewhere have added their contributions that have made possible the final discovery that will lead to the annihilation of rickets.

A century and a half ago practically every other person that walked the streets was badly pockmarked from the effects of smallpox. An observant country doctor named Edward Jenner noticed that the dairymaids of pastoral Gloucestershire, where he lived, were notably immune to smallpox and he got the idea that they must have acquired this immunity from their occupation. The cows, as was well known, were often affected with a mild disorder called vaccinia or cowpox, which caused an eruption of the udders, and the milkers were apt to get a similar eruption on their hands through contact. Jenner's curiosity was aroused and he set about to test the truth of his conjecture, by determining whether persons who had once had cowpox could afterward be successfully inoculated with true smallpox; and he found that they could not. Through this chance discovery, and by the universal vaccination of children, a once-dreaded scourge has been practically eliminated; and yet, so forgetful are people, there are now anti-vaccination societies who would defy the laws and put us back to the pre-Jennerian days when the terrorizing shadow of smallpox stalked among us.

Thus among the difficulties that confront the medical profession is the overcoming of popular indifference, prejudice, and ignorance. That the public will patronize the advertising quack, the charlatan, and the patent-mediciner, shows the abounding credulity of human nature; and with this the doctor is half aggrieved, half amused.

But when a really dangerous (because well-endowed and organized) group of persons of perverted sentiment set themselves up to repudiate what medicine has learned from experimentation on animals, and would have laws passed to restrict or prohibit further research of this sort, the doctors are certainly no longer amused. They would gladly see the unvaccinated anti-vaccinationists exposed to malignant smallpox and the as yet unvivisected anti-vivisectionists faced by the necessity of a critical surgical operation or exposed to an epidemic of old-fashioned diphtheria, such is their indignation at proposals that not only would favor the return of diseases now almost wholly eradicated but would stand in the way of getting others under control.

We are accustomed to say that the vast expansion of knowledge makes professional training today increasingly more arduous. This I presume has been said by every generation; yet there is no evidence that the human mind as an organ has grown any more receptive during these twenty centuries since the heyday of Greek thought, or that people are any more observant, or more industrious, or more capable artisans than in the age of Pericles. The sum total of knowledge is doubtless greater and far more widely disseminated, but the more we know, the more there is to know, and one may question whether there is any more wisdom. It was difficult then to become a good doctor just as it is now.

To be sure, the profession requires a longer period of training before giving a novitiate the privilege of practising; but since Medicine must be a lifelong study, the doctor who does not learn something new every day about disease or the way people react to it neglects his oppor-



tunities. So the same qualities of industry, of manipulative skill, of perseverance, of sympathy, of understanding, were required centuries ago as now. A profession in which there are no difficulties to surmount would not be worth going into. Life has its hurdles, which some take awkwardly, others gracefully, some complainingly, others joyfully, depending on one's temperament, health, and character.

So if the professional ideals and the difficulties are not essentially different from what they were to our predecessors of antiquity, the opportunities are become in these later days amazingly increased on account of the many-sidedness of the doctor's vocation which the subdivisions of Medicine have made possible. For, in spite of its continuity of tradition, the medical profession has succeeded in effectually shaking off the shackles of dogma and of precedent which still appear to hamper the progress of Divinity and of Law. There have been lapses, to be sure, when the advance of Medicine was equally handicapped by undue reverence for authority; but on the whole it may be fairly said that since the Renaissance ours has been the most progressive and forward-looking of the three great professions. No less altruistic in its motives, it has been far more united than Divinity, with which it was once allied in an "angelic conjunction." For though it has been cynically remarked, "If you will show me three physicians I'll show you three agnostics (or was it atheists?)," this in either case means little more than that doctors began to be irregular in their attendance at church long before the game of golf supplied a reasonable excuse for others. And should any of you be troubled on this score, I can recommend that you read what was written by a wise physician three hundred years ago on the



subject. His essay contains the following paragraph and much more besides: —

Thus there are two bookes from whence I collect my Divinity; besides that written one of God, another of his servant Nature, that universall and publik Manuscript, that lies expans'd unto the eyes of all; those that never saw him in the one, have discovered him in the other.

Yet Medicine, like Divinity, retains the expectation of its votaries that their humanitarian instincts predominate, whereas in the Law one gets the impression that justice oftentimes is subordinate to commercial interests. There is a struggling Legal Aid Society, to be sure; but as yet the Law subscribes to no charity clinic, has no social-service organization, and no outpatient department adjoins the courtroom.

It is said that doctors make poor business men, and of this reputation the profession need not be ashamed. The doctor and his patients are brought too intimately together to make possible or tolerable the usual business relations between tradespeople. In this respect Medicine still carries some of its ministerial traditions; the only rich physicians are those who happen to have married wealth, under which circumstances they are likely to deteriorate as doctors unless the match prove an exceptional one.

What influences young men to take up Medicine as a career is not always apparent. Certainly doctors, though they are happy to see them do so, are not likely to urge their sons to follow in their footsteps. They know too well that the preparation is longer and more expensive than for any other vocation, that the life of a physician is a self-sacrificing one, and that, as financial rewards go, the physician in consideration for what he gives is poorly re-

munerated. And yet, in spite of this, it is curious how often the sons of doctors become doctors. There are many examples. The recent lamented death of John Warren, who taught Anatomy at Harvard, ended a line of Warrens that goes back with distinction to the middle of the eighteenth century. And there is another line of doctors more appropriate to mention here as illustrating this tendency, for the first of them left an indelible imprint of his personality on this, your beloved Dartmouth. The story shows how some trifling episode or contact, in those simpler days before college faculties busied themselves over vocational lectures, was usually the determining factor in the choice of a profession.

A hundred and fifty years ago a young Harvard undergraduate named Josiah Goodhue because of a swollen knee was obliged to leave college, and in due course became the pupil-apprentice of the doctor in whose care he had recovered and in whose activities he became interested. He started practice in Putney, Vermont, became the pioneer surgeon of these parts, and ere long was summoned to Chester to amputate the leg of a man who had been severely injured. He had never before performed a major amputation, and, needing help, asked the bystanders if someone would volunteer to hold the leg. A farmer boy who happened to be teaching in the district school at Chester stepped forward and accepted the trying task without flinching.

Some years ago a very readable novel, *The Doctor*, by Ralph Connor, described an episode which may well enough have been suggested by the chance happening that thus brought Nathan Smith and Josiah Goodhue together and lured the younger man into the other's calling. It is on such chance encounters that interest in medical prac-

tice is apt to be aroused. And I am not at all sure that we nowadays go about our selection of candidates for the profession in the right way by insisting on an unduly long preparation in the premedical sciences before those aspiring to become doctors are ever brought in contact with patients. It is possibly a good way of selecting those who are likely to become medical scientists, but in the process many who have the natural gifts for medical practice are apt to become sidetracked. There was much to be said for the old apprentice system as a natural entry into the profession, after which those who were ambitious and industrious and felt themselves capable of something better than a general practice — if anything can be better — could resort to some medical school for additional instruction.

So let us see what happened to Nathan Smith as typifying an ambitious youth in days when ambitions were less easily gratified than now. At the close of his apprenticeship with Goodhue he started practice in Cornish, and ere long, feeling the need for further training, he entered the newly established Medical School at Cambridge. There in 1790, after two years of study, having kept up his practice in Cornish between sessions, he received his Medical Baccalaureate, the only graduate in a class of four and the seventh to receive the degree. Four years later, in 1794, he married, and, what is more important, made a wise choice, which is something not all young medical men do, as those who are familiar with the story of Lydgate will recall.

Medical practice in those pioneer days of scattered hamlets was an arduous business, mostly on horseback, over bad roads or no roads at all: bringing the babies into the world, helping the aged as comfortably as possible out of



it; patching up the ailments and accidents of the intermediary years; often single-handed struggling to control some epidemic of cause unknown, every doctor meanwhile his own apothecary. A life of this kind in another country of long winters has been vividly described by Ian Maclaren in his *Doctor of the Old School*, a story every prospective medical student should read if he wishes to know what may be the rewards of the country doctor in the love and affection of his patients.

After a few years of this, with the inevitable rapid expansion of practice and responsibility, the young Cornish doctor, conscious of the growing need of this part of New England for more practitioners, approached President John Wheelock with the proposal that Dartmouth should offer a course in Medicine. There were at this time only three established medical schools in the whole country, and it seemed a radical step for the young college just getting on its feet. So a year passed before Nathan Smith, who meanwhile was training apprentices of his own, was given encouragement to proceed. And how did he proceed? He dropped his practice, borrowed money, and, leaving his wife and child behind, took passage on a crazy sailing vessel in mid-winter for a year of study in Edinburgh and London, not only to prepare himself better as a teacher, but to purchase books and apparatus with which to start the school, on the gamble that the college authorities would pay the bills.

Who ultimately paid them history does not relate, but it does relate that President Wheelock attended one of the early lectures in Room 6 in the northeast corner of the first floor of the old Dartmouth Hall in the autumn of 1798 and was so impressed that at the ensuing evening prayers in the old chapel he gave thanks as fol-



lows: "O Lord, we thank Thee for the Oxygen Gas; we thank Thee for the Hydrogen Gas; and for all the gases. We thank Thee for the Cerebrum; we thank Thee for the Cerebellum; and for the Medulla Oblongata. Amen!"

It's an old saying that the Lord is expected to pay many a doctor's fee, and even such an appreciative invocation did not materially lighten Nathan Smith's load. Not until 1804 was he given the salary of two hundred dollars which enabled him to relinquish the practice he meanwhile had maintained in Cornish and to move his rapidly growing family here to Hanover.

He was having plenty to do meanwhile in addition to conducting single-handed his courses here. An epidemic of fever was then raging up and down the Connecticut Valley. Fevers were not well differentiated at that time and what we now call typhoid was then known as typhus. We still have much to learn about fevers; but these, be it remembered, were the days before the bacterial sources of infection were known, and the best one could do was to distinguish the prolonged fevers on the basis of their differing manifestations, not, as we now do in many instances (not yet in all, by any means), on the basis of their causal agency. Nathan Smith had not much time to write, but the few papers which he came to publish have become classics of medical literature. One of them is his celebrated essay on *Typhous Fever* in which occurs this paragraph: —

When I commenced the practice of physic in 1787, in Cornish, N. H., a town situated on the banks of the Connecticut river, I was informed by physicians, as well as the inhabitants who had resided many years in that part of the country, that about twenty years previous, a fever, which they had called *nervous*, had prevailed in that vicinity, had soon after disappeared, and, for the twenty years next succeeding, had not returned in a solitary instance. It was eight years after, during which time I

visited the sick pretty extensively in that and the adjacent towns, before I saw or heard of a single case of Typhous Fever. I was then called into a family, one member of which had died of this disease, and another then lay sick of it. Soon after, I left this portion of country, and was absent [abroad] for about eighteen months, and was in consequence unable to trace the course of the disease; but in 1798, a year after my return, it made its appearance in the village surrounding Dartmouth College, twenty miles distant from Cornish, and in several neighbouring towns simultaneously. From that time to the present, a lapse of more than twenty-five years, I have never so far lost sight of the disease, as to be unable to follow its changes from one place to another, and to tell where it was prevailing.

An outbreak of typhoid fever in a college town was not an uncommon thing for many years thereafter. But this autumnal scourge, which even in my days as a medical student filled the hospital wards, is now looked upon as a civic disgrace; so far has our knowledge advanced. Typhoid is so rare, indeed, that students scarcely become familiarized with it; but when it struck a community a hundred years ago the practising doctor had his work cut out for him, we may well believe. He was battling with an unseen enemy whose methods of attack were unknown, only its effects being seen; and the common-sense lines of treatment Nathan Smith recommends could not well be improved upon.

Today, in contrast, our chief business is to see by public-health measures that the typhoid bacillus does not get into people's milk and water and food — not always so simple as it sounds when one realizes that innocent carriers of the disease may be found even in our kitchens. So we may keep in reasonable check many other scourges — cholera, yellow fever, plague, smallpox, syphilis, malaria, scarlet fever — as their cause comes to be known,



or we gradually come better to understand their method of spread. There are many other scourges against which we remain largely unprotected (some of you will recall the terror caused by the influenza epidemic during the War), but on the whole it may be said that if the politicians could only do as much toward the elimination of war, and the commercial distributors of food as much toward the elimination of famine, as the doctors have toward the elimination of pestilence, this world would be a more secure and happier place in which to await the arrival of the last of the Four Horsemen.

But we have drifted far away from the early founding of your Medical School, which so thrived under the genius and driving energy of its one-man faculty that its reputation soon began to overshadow that of Harvard, and not a few Boston doctors sent their sons here for their medical course rather than to the local school. With such a start and with such a man, what might not have been the present status of medical education here in New Hampshire! Institutions flourish or wane under the personal influence of an individual, and Dartmouth was perhaps not yet old enough to carry a rapidly growing medical department which threatened to dominate the college. Rival schools were in the offing then as now, eager to lure unusual men to their faculties. So Nathan Smith, after teaching here for just twenty years, was finally prevailed upon to take up his allegiance with the newly established medical department of another New England college which, under the spur of Benjamin Silliman, a man with scientific vision, was venturing to take its first step in the growth toward a university.

It has been said that the best way to gauge a doctor is to look first at his books and then at his bairns. On

both of these scores Nathan Smith's record was exceptional. He knew the value of books for educational purposes, and his collection of medical treatises he handed over in turn to Dartmouth, to Yale, and to Vermont. There possibly came to be little room for them at home, where the nursery with ten children must have crowded out the library. His four sons studied medicine and became prominent as physicians or surgeons — one of them as a teacher scarcely less renowned than himself — and some of the daughters married doctors. When the count was last made there had been nine grandsons and six great-grandsons in the profession; and though the full score has not been kept, one at least of his great-great-grandsons now holds the Chair of Medicine at the Johns Hopkins which Osler once adorned.

Here, then, was a man who for Dartmouth men in particular may well serve as their ideal of a doctor. A man possessed of originality of thought, of energy, of resourcefulness, he became a brilliant surgeon in days when operations were beset with especial difficulties and hazards; an accurate and keen observer, he became an important contributor to medical literature; he had the courage to wage warfare against the professional mountebanks that abounded in his day no less than in this; he had the sympathetic disposition and the generous spirit combined with common sense that made him sought after as a general practitioner; he had the sound judgment of a great teacher, and even while filling his position at Yale he found time to organize the medical school at Bowdoin, where he gave a summer course of lectures for five years, at Burlington when a medical school was started by the University of Vermont, and he was instrumental in organizing the Jefferson Medical College in Philadelphia.



The fact that his finances were often in arrears is quite consistent with the story of his having been summoned by messenger one day to a town near New Haven where an explosion had taken place, so shattering a working-man's leg as to require an amputation. While engaged in the task, his fee of fifty dollars was collected from the crowd of sympathizing bystanders, and at the conclusion of the operation the money, duly counted, was handed over to the patient before the doctor rode away. In one of his letters at this time he wrote: —

My success has been very great as respects curing, and if my patients had been of the right sort, my business would have been very good, but alas, many of them have been poor, and the people of Connecticut have no idea of rewarding professional men except by compulsion or being begged. The lawyers compel and the priests beg for pious purposes.

I did not set out to make this address center about Nathan Smith, but he represents the type of man much needed in the profession, and indeed commonly found in it, though their names be unsung. Success lies in the silences though fame be in the song. And it is the everyday life of the ordinary practising doctor that is after all the most interesting and of which the laity knows least. It possibly can never be satisfactorily told, and such glimpses of it as occur in fiction are with few exceptions wholly inadequate. *A Country Doctor*, by Sarah Orne Jewett, gives an attractive but placid picture as little suited to the highly spiced tastes of readers today as Anthony Trollope's *Dr. Thorne*; and George Eliot's *Middlemarch* might meet the same criticism, though Lydgate has been generally held to be the best-portrayed doctor in fiction.

And what, you will ask, may be some of the doctor's rewards? To discover something new in the realm of the

unknown, which will always be vast, and to have it recognized as your own contribution, is perhaps the greatest of them. Such elation Banting must have felt when he and his young co-worker finally hit upon the substance insulin; and Banting confesses that one of the factors that spurred them to the greatest efforts was their desire to keep a dog, of which they had grown fond, alive after the removal of its pancreas. This was a lucky stroke, and so was the discovery a year ago by Minot and Murphy that a supposedly fatal disease known as pernicious anæmia was curable by the feeding of liver or extracts of liver. These are striking examples, to be sure, but satisfaction no less rewards those who make less spectacular additions to our knowledge that go unheralded.

The conquering of disease is a great game. The stories, many of them, are like romances. What may very possibly have had much to do with the fall of the Roman Empire was malaria. Horace wrote to Mæcenas to say that, during those summer months when the figs ripen, faces become pallid with fever, burials are frequent, and the reading of wills becomes the order of the day. The fever-stricken Roman Campagna from then almost to our day has kept people away from Italy and indoors after nightfall because of what was regarded as miasmal air. Malaria, which of course implies nothing more than bad air (*mal-aria*), was one of the fevers of peculiar type but of unknown cause which could be partly kept under control by extracts of what was long known as Jesuits' bark (*cinchona peruviana*), which had been found in use among the South American natives in the seventeenth century and brought to Europe. From this bark two centuries later quinine was finally extracted by the chemists.

Let me quote a paragraph from the best-known American medical textbook concerning malaria: —

In India the disease is very prevalent, particularly in the great river basins. Terrible epidemics occur. In the Punjab in 1908 there were more than three million deaths from fever, a large proportion of which were from malaria. In Burma and Assam severe types are met with. In Africa the malarial fevers form the great obstacle to European settlements on the coast and along the river basins. The *black-water* fever is a very fatal type of malarial hæmoglobinuria. The Atlantic coast line of Central America is severely infected, and the Isthmus of Panama for centuries was known as the "white man's grave." In the tropics there are minimal and maximal periods, the former corresponding to the summer and winter, the latter to the spring and autumn months.

The South was so riddled with the disease, which was called typho-malarial fever, that when I was a young student in Baltimore so many of the patients had a chronically enlarged spleen — "ague cake," as it was colloquially called — that we invariably had to take this into consideration in its possible bearing on other maladies. To what could this mysterious disease be due? In 1880 a French army surgeon stationed at Algiers, while examining the blood of malarial patients, discovered some peculiar specks in the red corpuscles which he thought might be related to the malady. Other investigators all over the world began to look for these same bodies and found them, and it was soon learned that they were more prevalent just at the time of the chill and that different kinds of bodies were present in malaria with different paroxysmal cycles of fever. Birds were found to be afflicted with a similar malady, and a young Hopkins medical student one summer when on his vacation in Canada studied the blood of a colony of sick crows and observed the process of fertilization of the plasmodium, as the organism had come to be called.

Some time before this, there had been an outbreak



of another sort of fever among the cattle on the Texas ranges which threatened to exterminate the herds. A scientifically trained doctor named Theobald Smith was sent there to investigate the disease, and, after many months of study in surroundings most unfavorable for scientific research, he showed that the fever was conveyed from an infected to a well animal by the bite of a tick and that the extermination of this cattle tick would stop the epidemic, which it did. This was well enough, but, what was more important, the study led to the idea of what is called an "intermediary host." Without the tick, in whose body a certain cycle of the infecting agent must take place, there could be no Texas fever of cattle. So there might well enough be intermediary parasitic hosts in other diseases. There was at this time a British army surgeon stationed in an obscure post in far-away India, where malaria was rife. He began studying the local parasites, and one may imagine his elation in finding the malarial plasmodium in the glands of the proboscis of certain mosquitoes. An infected mosquito, in other words, could as certainly inoculate the victims of its sting as if blood had been drawn by a hypodermic needle from a malarious patient during a chill and then reinjected into a second person. It proved to be only a certain kind of mosquito, and only the female of the species at that, all of which took untold hours of trial and error by countless students the world over. One of these students, Ronald Ross, has written in his *Memoirs*: —

A witty friend of mine once remarked that the world thinks of the man of science as one who pulls out his watch and exclaims, "Ha! half an hour to spare before dinner: I will just step down to my laboratory and make a discovery." Who but men of science themselves are to blame for such a misconception? Out of

the many memoirs which fill our libraries few recount the labours of investigators, even of those who seek to solve the secrets of the great maladies which annually destroy millions of us — surely a matter of interest to everyone. Our books of science are records of results rather than of that sacred passion for discovery which leads to them. Yet many discoveries have really been the climax of an intense drama, full of hopes and despairs, visions seen in darkness, many failures, and a final triumph: in which the protagonists are man and nature, and the issue a decision for all the ages.

How simple now to understand why the French under de Lesseps left fifty thousand tombstones in Panama and failed to complete the Canal. There were devastating ants in the Canal Zone that consumed wood. The hospital beds were of wood, and to keep the ants away the legs of the beds stood in four bowls of water. In the water mosquitoes bred in profusion, became infected by feeding upon patients with malaria (and the same was of course true of yellow fever), and then scattered to bite other persons as yet uninfected.

How stupid this was! How stupid it was to fumigate the ships at quarantine that had cleared from some port where plague or yellow fever was known to be rife. The sulphur fumes merely drove the infected rats and mosquitoes ashore. No more effective way of spreading the contagion could have been found. And yet how many equally stupid things we do today in our ignorance, God only knows. You of the next generation of doctors, with triumphs undreamt of before you, will look back on the ignorance of mine with pity, and yet with charity, knowing that your own turn will come.

Digging for buried treasure, climbing mountains, shooting big game, exploring unknown countries, are tame forms of sport in excitement and rewards compared to

the sort of thing in which the doctor may engage. To face the charge of a lion or an enraged elephant is a test of steady nerves and presence of mind. To conquer a mountain peak previously unascended, to lose one's self in the polar regions or pick one's way through a tropical jungle for sport or exploration, bring hazards enough — and a good many don't come back. Even doctors like Livingstone and Kane and Nansen have led such expeditions. But it takes no less presence of mind, no less steadiness of hand, for a doctor in an emergency to tracheotomize a strangling and struggling child and to suck a diphtheritic membrane out of the wound into his own mouth; or, in these days when diphtheria has been conquered, to insert a tube into the trachea of a suffocating child and remove a foreign body that has been inhaled.

In a recent number of the *American Mercury*, there is an article on the experiences of "The Country Doctor" in which the author tells of having been summoned in the middle of the night to the bedside of a poor fellow whom he found apparently strangling to death. In the dim light of a coal-oil lamp held unsteadily by the dying man's wife he succeeded, by opening a large abscess in the back of the man's throat, in saving his life; and he thus describes his own reaction to this episode: —

Happy? As I drove homeward that night I doubt if even a Methodist evangelist who has just defrauded the devil of his legitimate prey by converting the wickedest man in town, or a criminal lawyer who has snatched a millionaire murderer from the gallows, could possibly feel more jubilant and uproarious. Incidentally, about six months later I collected four dollars for that job. I felt a little bit ashamed of accepting it, for I had already been so richly, so magnificently paid in the pleasure the experience gave me. Put yourself in my place. Wouldn't you rather enjoy



an adventure like that than clean up a few thousands in the stock market or at the race track? I believe any normal man would.

To be sure, there was no risk in this to the doctor except the risk of failure. But this may not always be so. The list of professional martyrs still rolls up. Many a doctor laid down his life in blind combat against yellow fever in the days when it ravaged our coasts. So did Jesse Lazear when he furnished the proof by permitting himself to be bitten by a mosquito known to have taken its last meal from a victim of the disease. And now, with yellow fever driven to its last stand on the west coast of Africa, it still takes toll of those who have relentlessly pursued it there — that charming Irishman Adrian Stokes and the Japanese scientist Noguchi having been the most recent of its better-known professional victims. Thus a doctor may come to engage in most varied tasks — tasks as far remote as showing a mother how to bathe her newly arrived bairn and delousing a nation badly infected with typhus, as Richard Strong deloused Serbia during the Great War.

All said and done, I think if you wish to test yourselves and to learn whether Medicine is likely to offer an occupation more congenial to you than any other, I would let it rest on whether you are interested in nature, on whether your curiosity is so aroused by the living things about you that you are impelled to seek for explanations; and you might try yourselves out by visiting one or two medical schools or by going on a doctor's rounds or by watching an operation by someone you know who will explain the purpose of what he is doing. It is the informal contacts of life rather than the formal processes of education that chiefly influence us; learning has little to do with perfunctory teaching or listening to lectures. De-

cisions are made on chance encounters when mind meets mind more often out of, than in, the classroom — a day spent together, a chance conversation, an opportune book may turn the trick.

And if you would read something about Medicine, I would suggest this order. You might begin with Ian Maclaren's story of the doctor in *Beside the Bonnie Brier Bush*; and then perhaps Robert Herrick's *Master of the Inn* for a picture of quite another kind of doctor; and then Dr. John Brown's *Rab and His Friends*. Should these stories arouse your interest and sympathy, try some other of John Brown's essays in the "Spare Hours" series, and Weir Mitchell's *Characteristics*, and Osler's *Æquanimitas*, and Stephen Paget's *Confessio Medici* — good things to read whatever you may come to do. And then some medical biographies, preferably by persons who had the gifts to write short ones: Howard Kelly's *Walter Reed*, Agnes Repplier's account of J. William White, for example; Grenfell's autobiography; Trudeau's.

And from this, pass on to some of the books that have been written especially for young men in your position of uncertainty, such as Richard Cabot's *Training and Rewards of the Physician*, published by Lippincott ten years ago, or L. F. Barker's *The Young Man in Medicine* in Sneath's Vocational Series, just issued by Macmillan. And then it may be safe for you to read a cynical and callous novel about a disappointed doctor named Arrowsmith who dabbled ineffectively in medical science, for which piece of fiction the *Life of Pasteur* by Vallery-Radot will serve as an effective antidote.

You will see, then, that Medicine offers many careers: as *physician or surgeon* wholly engaged in general practice, or in some one of the many specialties; as *investigator*

in one or another of the medical sciences, which are likewise divided into many special types of work; or as *health officials* whose duty it is to protect the public against disease. So many pestilential diseases are now under control, so many nutritional disorders are becoming understood, so considerably has the expectation of life been prolonged, the impression may be gained that the profession as a whole is gradually bringing it about that the medical practitioner will soon no longer be needed. It was thought some years ago that there were an unnecessary number of medical schools in existence — that too many doctors were being turned out for the needs of the country and too poorly educated for its good. As a result, many medical schools were closed, Dartmouth, alas, among them. Like many movements of the sort, once started it was overdone, and as the surviving schools promptly raised their entrance requirements and restricted the size of the classes, there has become a dearth of general practitioners throughout the land, their places being rapidly taken over by the representatives of medically ignorant cults.

Because, through modern methods of hygiene and of prevention, more infants survive, more children escape rickets and tuberculosis and scarlet fever and diphtheria, more grown-ups typhoid and appendicitis and gastric ulcer, more women the accidents of childbearing, more industrial workers the maladies to which they are heir, there are just so many more people who grow up to have other countless ailments and injuries and diseases which we do not know how to prevent and consequently are obliged to care for. All of us some day will be stricken in one way or another and the need is as great as ever it was for the same kind of practising doctor, in the rural districts, towns, and cities, that Nathan Smith proved him-



self to be, whether in Cornish, Hanover, or New Haven.

To meet this need, there is a movement already on foot. The Medical School in Albany is making plans to provide doctors for the Adirondack district of New York State which lies within its reach, preference being given in the selection of students to those who live within the district, with the intent of giving them at moderate cost an intensive training which will fit them for general practice. It would be a great thing for Medicine if the full medical course, abandoned fifteen years ago under the pressure for impracticable standardization, could be resumed by Dartmouth with the single purpose of providing a proper quota of practising doctors in similar fashion for New Hampshire. What a delight it would be to teach medicine in a school established for an explicit purpose of this sort — a school in which emphasis would be laid solely on the patient and in which medical students could be freed from the unnecessarily long preparation intended to make scientists of all of them. In this way the ranks of the local profession could be recruited and kept filled; and without doubt those few exceptional persons who might happen to possess talents for teaching and research would find their way into those fields, while to the others no less useful, interesting, and satisfying careers would be open.

And may I in closing again quote from the article *by* a country doctor *about* the country doctor.

. . . If [he says], among the medical students and recent graduates of today there should chance to be a man without either scientific or mercenary ambition; who feels no itch for immortal fame, no need for riches or taste for luxury; who lacks the American instinct to do Big Things in a Big Way; whom a modest competence will suffice, with the opportunity to help those

who so sorely need the skill of a competent physician; who loves the country and would rather watch the sun setting behind the wooded hills than see the electric signs light up, and prefers clean, clear air to soot and filth; who hates to be jostled by the crowd and to bruise his feet on hard pavements — if such there be, let him go to the country to practice. I can assure him he will be welcomed with open arms, and that — if he behaves himself — he will be happy, as I have been.

## II

### FROM TALLOW DIP TO TELEVISION

It would be a neglect of duty and show a want of respect did we not pause, at this halfway mark in our second century, to recall and give praise to our founders. Their story, often told, — by James Thacher of Plymouth in 1828, by Samuel Abbott Green in his Centennial Address fifty years ago, by James G. Mumford, that gifted writer who, had he lived, would have been the proper person to deliver this address today, by our beloved Secretary Walter Burrage in that invaluable source-book published only eight years ago, and still more recently by Henry R. Viets, as this Society's contribution to the Tercentenary Celebration, — the story, I say, though often told can never grow stale from retelling on occasions such as this.

1781

A century and a half reaches back a long way in the short history of our country. Another stretch of equal length takes us to the wilderness with its coast-line fringe of scurvy-stricken and stockaded settlements whose establishment we have so recently been celebrating. When a medical student here in the '90's, I once accompanied a friend to Plymouth to take Thanksgiving dinner with

*Annual Discourse before the Massachusetts Medical Society at its 150th reunion, held in Boston, June 8-10, 1931. Reprinted from the "New England Journal of Medicine," June 11, 1931.*



his grandmother. This charming old lady, who had lived to see more than eighty such festivals, pointed to the symbolic three dried grains of Indian corn by her plate and remarked that only two people stood between her and the child that was born on the *Mayflower*; for her grandfather had once told her that he knew an aged man who as a youngster had witnessed Peregrine White's funeral.

That was forty years ago, and despite this passage of time four persons might still easily relay the same period—even three, should they have followed the prescription for longevity recommended by that vigorous centenarian, Edward Augustus Holyoke, the first president of this Society, who is surely with us in spirit at this gathering. In his childhood there were persons still alive who had participated in that migration of sturdy and God-fearing Puritans from East Anglia to our shores; and only a hundred years have passed since he, on his one-hundredth birthday, dropped his practice in Salem long enough to come here and give this Society his benediction.

To most of us in this audience Armistice Day of 1918 is still a recent memory. Fifty years ago, at the time of our centennial celebration, the surrender of Lee at Appomattox was an equally vivid episode, and those who had then seen military service were still young—almost as young as are today's veterans of the Great War. "There are those here present [said Samuel A. Green in his Centennial Address] who have been obliged to perform severe operations of surgery, in the dark hours of the night, by the faint glimmer of smoky candles and dingy lanterns, on an extemporized table, or perhaps with no table at all." And he goes on to give a long list of the medical officers from Massachusetts, his friends and comrades,

who either were killed in action or died during or after the war from illness contracted in the Army.

The real horrors of that prolonged struggle for preservation of the Union were not for Northerners to know, and the devastation of the late war affected another continent than our own. Even so, we favored ones of the present day have seen enough of the post-bellum state of mind to realize how unsettling and disillusioning is the period of reconstruction during which the generation growing up is at loose ends and the generation suddenly grown old distraught for want of some constructive program. This has been the inevitable aftermath of any long-drawn-out war both for victor and for vanquished, though it is not what our school histories are prone to dwell upon.

But these two wars were only four-year conflicts, our distant share in the last of them having been only half of that, whereas over six years of turmoil and uncertainty had already passed and the end was not yet in sight (far less the ratification of peace) when at the instigation of fourteen Boston doctors, on May 11, 1781, an *Act to Incorporate certain Physicians by the name of the Massachusetts Medical Society* had its first reading before the Legislature of the Commonwealth.

To be sure, with the evacuation of Boston by the British, the campaign had long since moved out of New England, and just now, after that discouraging winter when Washington had managed to hold his ragged, unpaid, and nigh mutinous troops together, it was moving from the Carolinas into Virginia. That Cornwallis was soon to be trapped in Yorktown, Washington himself could scarcely have foreseen, much less this group of Boston doctors who were probably as war-weary as were

people elsewhere. What is more, the prosperous among them, as was natural enough, if not actually out of sympathy with the rebellion were "near" Loyalists, some of them indeed having seen service with the British. So it is all the more remarkable that at such a time and under such circumstances a constructive program for the betterment of professional conditions in Massachusetts should have been successfully launched.

Who were these men — our fourteen Boston founders — who for the better part of a year had been holding meetings at the Green Dragon Tavern off Union Street and whose corporate number was soon to be increased by the addition of seventeen more, chiefly from other parts of the Commonwealth, which then included the District of Maine? Some years ago, I had occasion to seek information regarding the settlement of what was once called Upper Canada, which at the close of the Revolution came to be split off from the Province of Quebec. The first governor of this new province was General Simcoe, who had been Lord Cornwallis's Chief-of-Staff, and a large proportion of the settlers that took up land grants were either retired army officers or those who continue to be referred to across the border as "U. E. [United Empire] Loyalists." And I was told by a Toronto historian that people in the States were encouraged to forget that, from Massachusetts to South Carolina, most of the prosperous and well-to-do persons in the Colonies at the outbreak of the revolt got back to England if they could or, like Sir William Johnson with his Mohawks, made their way as refugees across the border to settle in Canada.

History is what historians choose to tell us, and the names of the Boston doctors who joined the Tory exodus



from these parts to Halifax at the outbreak of the rebellion are unrecorded. They were doubtless the élite of the profession, who were often seen at Province House and were well content with the established order of things. We need not be surprised, therefore, to find that of those who remained to found this Society seven were young men from twenty-two to thirty-two years of age, almost all of them having seen active military service, whereas the other seven, all older men, either were acknowledged Loyalists or were known to have had a lukewarm sympathy, to say the least, with the uprising. Even Edward Holyoke was induced by some of the substantial merchants among his Salem patients to sign a political manifesto favorable to the Royal Governor — a step he found it expedient ere long publicly to recant.

The "Tories" were but Conservatives by another name, and their satisfaction with things as they stood was natural enough. For them, well established in practice, the war meant the scattering of their clientele; and such of them as felt obliged for one reason or another to remain and face unpopularity had no easy time. James Pecker, the oldest of the group, in his fifty-seventh year had narrowly escaped arrest, and Samuel Danforth only did so by temporarily absenting himself until long after the Evacuation, when the intensity of local feeling had quieted down. James Lloyd, who had received first-hand from the two celebrated Williams — Hunter and Smellie — that knowledge of midwifery which made him the leading obstetrician of the colony, had long held the position as surgeon to the British garrison. With the notable exception of Joseph Warren, most of Lloyd's many pupils inherited his political sentiments, and some of them, like John Jeffries, enlisted in the British service. Thomas

Kast had been an officer in the British navy before he turned to medicine and walked the wards at Guy's and St. Thomas's Hospitals; and Charles Jarvis not only had been educated in England but had married into a prominent English family. They had much to give up.

To weld these discordant elements into a common society while the outcome of the war remained uncertain was a genuine accomplishment. Who the ringleaders may have been is now impossible to say; but almost certainly they were the younger men, and from what we know of his subsequent career it is not at all unlikely that John Warren, scarce turned twenty-eight, provided the yeast in the dough. "An artful man," said a contemporary, "certain to get to the windward of us all." After two years in active service he had returned to Boston and been put in charge of a military hospital where, on unclaimed bodies, he soon began giving anatomical lectures to army doctors. What he had to do with the founding of the Humane Society, the Academy of Arts and Sciences, the planning of the Massachusetts General Hospital, and the establishment of an embryo Medical School in Cambridge, besides presiding over this Society for a period of eleven years, is well known; but it is less well known that he meanwhile was obliged to provide the wherewithal for the upbringing and education not only of his own seventeen children but of his older brother Joseph's five, who had been left fatherless since that eventful day on Bunker Hill. Of such stuff were our founders made.

We easily forget what distances they had to cover. From Boston Common to Harvard College is now a matter of ten minutes by subway; but John Warren, when the weather was such as to make the water crossing to Charlestown precarious, was obliged to trek along Bos-

ton neck through Roxbury and Brookline a good seven miles to Cambridge to give his anatomical lectures to the Harvard seniors. A pleasant enough walk for a summer's day, but in the winter months when college was in session it was a wearisome journey even with a horse and sleigh.

Still these lectures were worth John Warren's labor and time had they done nothing more than turn toward medicine the thoughts of a young undergraduate listener named Jacob Bigelow, of whom we shall soon hear more. Distances, indeed, were then so great that Dr. Holyoke, still in his vigorous middle age, came only once all the way from Salem to preside over our sessions. And when we consider that it was fifty-four hours' hard travel by stage to New York over a well-beaten road, there was every reason for our members from far-away Berkshire to feel disinclined to pay dues to a society which chiefly benefited the members from Suffolk. They expostulated about this in vain and finally clamored for a separate organization.

With its population of some 12,000 persons, the town of Boston was still a most primitive place. There are dwellers on Beacon Hill today who are legally entitled to pasture and exercise multiples of two legs on Boston Common: two legs, a goose — four legs, a cow — six legs, a cow or a pig and a goose. Of friction matches to light a fire, of coal to heat the drafty clapboard houses in winter, of refrigeration to preserve food in summer, there was none. The water from the wells was brackish, the slops went into the gutters of unpaved streets, and there were no rubber overshoes to protect leather from snow and slush. Doctors visited their patients shanks'-mare in good weather or, if fortunate, astride a horse in bad. Phthisis was prev-



alent and in wintertime the children died overnight of membranous croup, the old of pneumonia; in the summers agues, fevers, and fluxes took their seasonal toll. Only the sturdy survived and even they were almost certain to have pockmarked faces, for smallpox, scarcely checked by inoculation, was endemic. Of all this, familiarity bred a certain contempt. It was only when actual pestilence such as cholera and yellow fever gained a foothold that terror, such as we no longer can appreciate, struck deep in the hearts of the people. But when these times came —

None too learned, but nobly bold  
Into the fight went our fathers of old.

### 1831

Fifty years go by and 1831 sees the passing, at fourscore, of Thomas Welsh, the last surviving founder, the venerable Edward Holyoke — at fivescore and one! — having preceded him by only two years. The town has become a city, wisely governed for six years past by the first Josiah Quincy, even to the point of having a modest department of health. Some streets are being paved if only with a central strip of pebbles, and there are cobblestone sidewalks broad enough for a single wayfarer. Jamaica Pond has been tapped for water which is brought to the town in buried conduits of wood. The question of sewage disposal is under discussion. And preparations are being made to utilize gas from the works at the foot of Copps Hill to light the principal thoroughfares.

In all this effort to make the young city a model of sanitation, the doctors, by now a well-knit group, lend their combined influence. Times have greatly changed. It

is a buggy more often than a two-wheeled chaise at the door which now betrays the doctor's visit. The projected hospital, already become famous, has adorned the banks of the Charles nigh twenty years, and the medical school, long since transferred from Cambridge, is in active operation. But it must stir itself if it is not to be outdone by a rival institution in Pittsfield set going, under the able and energetic leadership of Henry Halsey Childs, by the Berkshire members who still feel out of touch with the parent society. And well they may, for with Robert Fulton's steamboats plying the Hudson they are in point of time much nearer to New York.

I happen remotely to know something of this, for my great-grandfather practised in the Berkshires till 1814, when he died of what was called typhus caught while caring for fever-stricken prisoners brought down to North Adams after the Battle of Plattsburg; and eight years later his son, after a period of apprenticeship, entered the Berkshire Medical Institution in its opening year with Mark Hopkins as a friend and classmate.

Meanwhile to this maritime region great prosperity has come. Yankee clipper ships, the pride of the seas, are seen in every foreign port where trade is to be found. More young graduates in medicine than ever before can afford a postgraduate period of study abroad, and the fame of Bichat, Laënnec, and Louis, of Flourens and Magendie, of Dupuytren, Velpeau, and Cruveilhier, has been luring them to Paris. Those that have returned are full of new ideas concerning fevers, the taking of clinical histories, the value of medical statistics; and they produce tubes to listen to the sounds in the chest in imitation of their recent master, he of the sweet-smelling name. And some of them, thanks to a man named Louis Daguerre,

bring home for parents or sweethearts that latest marvel, their image on a tin plate to replace the old black-paper silhouette of bygone days.

To be sure, not all the rising generation had moved in this familiar groove. There were nonconformists then as now. One of them, an apprentice of Jacob Bigelow's, that Byron-mad young adventurer Samuel Gridley Howe, has just returned to Boston after four years' absence spent as a participant in the insurrection against Turkish rule in Greece. Not for him to slip back into the old groove. Mature before his time, he is turning over in mind the problem of educating the blind — more particularly those born blind. Reputation is an accident. His wife ere long was to become celebrated overnight on a hymn of battle, whereas his name has become lost in that of the Perkins Institution, of which he was Superintendent for forty-three years, and in the reputation of Laura Bridgman, his most celebrated pupil. Nor need we forget that it was he, when on a visit to England, who encouraged the young daughter of his friend Nightingale in her ambition to become a hospital nurse, which would by no means be the dreadful thing others had said it would be.

James Jackson is now, in 1831, nearing the end of his seven-year period as president of this society, at whose annual meeting, to judge from the meager report in the three-year-old *Boston Medical and Surgical Journal*, no reference is made to its being a semicentennial anniversary. But the fiftieth milestone of a local society meant little or nothing with similar organizations everywhere coming into existence like corn popping in a pan. It was a time to look forward, not back. The first great migration of the people to the West in covered wagons was going



on, and things of great medical significance were happening on the very frontiers—in the village of Danville, Kentucky, where a man named McDowell has been successfully removing ovarian cysts; at a remote army post on the distant island of Mackinac, where, thanks to a charge of buckshot which left a permanent hole in the belly of a young French Canadian, a man named Beaumont has been shedding light on the mystery of gastric digestion. Given the divine spark, it may burst into flame in a setting however primitive.

It was in this same year of 1831 that cholera swept over Europe, and when in due course the epidemic reached this country its ravages in Boston were checked by the wise sanitary rulings of Jacob Bigelow, then in his prime and soon in turn to preside at our meetings. Botany, so essential to *materia medica*, was still one of the principal medical disciplines; and Bigelow's magnificent treatise, with its engravings devised and printed in color by himself, is outranked only by the *opera* of that other doctor botanist, Asa Gray. And his Annual Discourse *On Self-limited Diseases* shortly to be delivered before this Society put many an apothecary out of business by its vigorous skepticism in regard to the superabundant drugging to which the profession had been all too long addicted.

It was in this same year also that the legislature passed *An Act more effectually to protect the Sepulchres of the Dead, and to legalize the Study of Anatomy in certain Cases*. In the course of the debate it is stated that

An honorable member from this city, after expressing very briefly, but impressively, his accordance with the sentiments expressed in this bill, added, that so solemn was his conviction of the great benefits to society of human dissection, and of its un-

qualified necessity to the comfort and happiness of mankind, that it was not improbable he should make, in his will, such a disposition of his own body.

And so he did: for John Collins Warren, holding the combined Chair of Anatomy and Surgery in the local school, well knew that could this bill be passed it would mark the end of those gruesome nocturnal expeditions in which students were accustomed to engage to provide themselves and their teachers with the material necessary for their training. The few standard operations then undertaken had to be done with speed and dexterity for which a precise knowledge of human anatomy was essential. But something more than this was needed to make surgery what it was to become — two things, indeed, of which we begin shortly to see the foreshadows.

Plans were on foot in this year of 1831 for a lying-in hospital, which for want of knowledge was soon to find itself a place, like most others of its kind, to be shunned as a pesthouse. All were fully aware of this, but when a youthful member of the Massachusetts Medical Society, who had shown a capacity to write prize-winning dissertations, published in 1843 his essay *On the Contagiousness of Puerperal Fever* a storm of criticism was aroused. He was not an obstetrician himself, indeed was without medical experience of any kind, for practice never came his way — a fact which he took humorously: "Small fevers gratefully received." What business had such a one to assert with arguments unanswerable that the blame lay at the man-midwife's own hand? Seventy years before this Charles White, the obstetrician of Manchester, England, had said much the same thing and it had been forgotten. Even now the time was not yet ripe and the profession had to wait for the Hungarian Semmelweis finally to ripen it after an interval of nearly two decades.

A year before Dr. Holmes had so definitely called attention to the principal cause of puerperal sepsis, a still younger man in the village of Jefferson, Georgia, having accidentally noted the stupefying effects of inhaling sulphuric ether, was undoubtedly the first to employ the drug for the purpose of what we call surgical anæsthesia. He published no report of his observations and, even had he realized their significance, was scarcely in a position to make himself heard. Holmes had an audience but no opportunity to put his views to the test. Crawford Long had accidentally hit upon one of the great discoveries of all time, but he had no audience whatsoever. And probably neither of them had the crusading spirit and combative vigor necessary to force their views upon a reluctant and traditionally conservative profession.

In science, credit goes to the man who convinces his contemporaries, not to him who first propounds the idea. The medical world was unprepared for a statement published in 1800 by Thomas Beddoes's young assistant at the Medical Pneumatic Institution set up at Clifton, England, to study the treatment of disease by respirable gases. Humphry Davy was much excited by his discovery that nitrous oxide was "respirable"; but no one else seems to have been aroused by his published statement that it "appears capable of destroying physical pain and may probably be used with advantage during surgical operations." Thomas Beddoes unfortunately was not interested in surgery, and it was left for an obscure dentist in Hartford, Connecticut, forty-four years later to put this idea to a practical test which was checked by the misfortune of a fatal accident. One shudders to contemplate what might have been the setback to surgery had a similarly fatal accident occurred on that momentous October 16, 1846, in the dome of the Massachusetts General



Hospital when J. C. Warren permitted an unknown person to administer by inhalation an unknown drug to a patient during the course of a hurried operation. Can one say that the time happened at last to be ripe for surgical anæsthesia, or should we grant that Morton succeeded in ripening it?

The possibility that a man may be able to ripen his own time — which I hasten to add is not a fancy of my own — is worthy of thought. One traces the conception of *contagium vivum* to early times; and the soporific sponge used at the School of Salerno was an ancient tradition. No idea is wholly new; what *is* new is getting people to adopt it and to act upon it. We know from his Notebooks that Leonardo fairly bristled with novel ideas, but, whether from indifference or inability, failed to register them on his contemporaries. He was probably a more observant and skillful dissector than the youthful Vesalius, who, however, had the vigor and determination, when the world was content with Galen, to enforce upon his contemporaries the ripening of modern anatomy. And so did Harvey for modern physiology, though instead of a huge folio it was a small, badly printed tractate of seventy-two pages full of typographical errors which turned the trick — and incidentally ruined his practice.

Even the written word must find its audience. An unknown Augustinian monk has no chance to ripen his time, and thirty-five years must elapse before de Vries calls attention to the important law Mendel had discovered and published in an obscure journal. Darwin might not alone have convinced his contemporaries, or *The Origin* even been read, had the theory put forward not had a doughty protagonist in the person of Thomas Huxley. And in more recent times Willard Gibbs is an

example of another who was far ahead of his time and either did not realize the full significance of what he had done or cared not at all.

Who possibly can tell how often precious fruits of brilliant minds have been unrecorded windfalls? In this day and generation some like Einstein and the lamented Michelson appear to have the capacity to ripen time for their revolutionary ideas even though the vast majority of people are at a loss to know what it is they are talking about. So the discoveries that revolutionize medicine may sometimes, like that of Laënnec and of Jenner and of Röntgen, find the time apparently ready for their reception, whereas others either make no impression or are vigorously combated. Opportunity, personality, position, chance, in addition to vision and the prepared mind — all have a hand. If Oliver Wendell Holmes had been a visiting physician to the new Lying-In Hospital and had set about aggressively as did Semmelweis to prove his doctrine; if Crawford Long had remained in Philadelphia to become surgeon, let us say, to the Pennsylvania Hospital, where he might have tried out his idea and gained an audience as did Morton at the hands of J. C. Warren and his surgical colleagues — what a different setting there might have been for these signal events of our second fifty years.

1881

Let us move on to the time of our centennial. It is still a horse-drawn era, though a network of iron rails is rapidly making the country smaller, and that convenient nuisance, the telephone, is already installed in some progressive doctors' offices. There are members of this So-

ciety still active who attended that celebration and visited the new abattoir at Brighton, lunched in Memorial Hall, took an excursion down the Harbor, and at the annual dinner the next day listened to toasts and speeches — not forgetting a “brilliant and sympathetic poem” by Dr. O. W. Holmes, “read in his own admirable manner.” Professors of anatomy still write poetry, I’m told, but they now keep it dark by anonymity.

The more fortunate among the younger men at that centennial gathering were fresh from their postgraduate studies abroad, but the talk was now chiefly of Vienna and the Allgemeines Krankenhaus, no longer of Paris, of La Pitié, and the Neckar. Only one possible member, so far as I know, had been trained in Paris, the grandson of Jacob Bigelow, who, having been given a place in the laboratory of a certain M. Pasteur, on the pretense that he could blow glass, became his first and — with one later exception, if I am not mistaken — his only American pupil. With vision, what profit might we not have made out of this adventure! But on his return in 1879, who showed the slightest interest in the cultivation of microscopic organisms and the disproof of spontaneous generation? No one. And, instead of becoming the pioneer American bacteriologist, Sturgis Bigelow found his only opening in a surgical outpatient department, from which he soon resigned to abandon medicine altogether. Five years must elapse before experimental pathology and bacteriology, transplanted with its Teutonic roots by Welch and Prudden, is finally to get a secure footing in America. A German-trained pathological anatomist, to be sure, we already had, — and few have been more famous, — but Reginald H. Fitz was a pupil of Rudolf Virchow, and like Osler, another pathologist-physician, returned



from abroad too soon for a training in bacteriological technique.

It was in August of this very year of 1881 that the great International Medical Congress under the presidency of Sir James Paget was held in London, and there Henry J. Bigelow gave a demonstration of his ingenious method of treating stone in the bladder. It is highly doubtful whether he could have heard, or, if he did hear, whether he understood any better than many others who were present the significance of the address given by his son's recent teacher, this same M. Pasteur, on *Vaccination in Relation to Chicken Cholera and Splenic Fever*. It was at the conclusion of his discourse, and before paying a tribute to Jenner, that Pasteur said: —

In France, we lose every year by splenic fever animals of the value of 20,000,000 francs. I was asked to give a public demonstration of the results already mentioned. This experiment I may relate in a few words. Fifty sheep were placed at my disposition, of which twenty-five were vaccinated. A fortnight afterwards, the fifty sheep were inoculated with the most virulent anthracoid microörganism. The twenty-five inoculated sheep resisted the infection; the twenty-five non-inoculated sheep died of splenic fever within fifty hours. Since that time, my energies have been taxed to meet the demands of farmers for supplies of this matter. In the space of fifteen days, we have inoculated in the department surrounding Paris more than twenty thousand sheep and a large number of cattle and horses.

Was such an announcement as this headlined in the medical press? It was scarcely noticed. Such a demonstration might be of interest to sheep raisers, but what had it to do with the practice of Medicine? Had not that irascible Benjamin Waterhouse of Cambridge carried out on Noddle's Island, under the auspices of the local board

of health, a precisely similar experiment eighty years before by first vaccinating nineteen children with cow-pox and three months later the same nineteen with the virus of smallpox which failed to "take"? That was a demonstration worth talking about!

We Americans appear to have had a peculiar blind spot in the eighties which prevented our seeing in their true light and proportions the two great revolutionizing movements that were under way. Neither Lister nor Pasteur appears, with the single exception I have mentioned, to have attracted any pupils from the United States. Lister had had visitors, of course. During his last days in Glasgow in 1869 the second J. C. Warren had paid him a brief visit on the conclusion of his long period of study abroad — had indeed brought back with him some lac plaster and other samples of the antiseptic dressings of the time. But with such newfangled business a mere surgeon to outpatients makes no great headway. Wounds heal well enough by the old methods, and as for abdominal operations, except under dire emergency, they'd better not be done at all, at least in a hospital that cares for its reputation. Consequently the particular John Homans (*tertius*) of that epoch, being an independent and venturesome soul, began to separate the women of New England from their cumbersome ovarian cysts on his own responsibility in a mist of carbolic spray at a private nursing home.

All this new talk regarding microscopic plants and their relation to the infectious diseases was not easily taken in by the older generation in the early eighties, though scarcely a month passed by without some new definitely pathogenic organism being isolated — anthrax, malignant œdema, the streptococcus and gonococcus, the lepra

bacillus, the pneumococcus, Eberth's typhoid bacillus yesterday, Laveran's malarial parasite today, and tomorrow — most important of all — the tubercle bacillus. Nor was the relation of bacteria to the surgical infections quickly grasped or wholly welcome in spite of the fact that Joseph Lister, now four years in London, with fortitude, patience, and dignity was slowly but surely ripening *his* time. What was important was not so much carbolic acid and the much debated "spray" as the great underlying principle that was involved; and this the Germans had been the first unreservedly to accept.

Efforts, to be sure, were being made by American surgeons also to fathom the depths of Lister's pronouncements. But without a training in bacteriology no surgeon can well understand the real meaning of wound infection, far less know how to prevent it. This training Sturgis Bigelow had had, and at a meeting on "Wound Management" before the Suffolk District Medical Society on April 15, 1881, he said: —

Every antiseptic operation ought to be carried out with as careful attention to the small details as if it were an experiment in spontaneous generation. . . . A single wipe with an imperfectly disinfected sponge is as sure a manœuvre as could be devised to invalidate the effect of every other precaution.

If I am rightly informed, Henry O. Marcy of Cambridge was at the time almost the only ardent advocate in this community of the complete antiseptic ritual, while others, if interested at all, took a middle ground in the controversy — to spray or not to spray. Fifteen years later, in the days of my house-officeship, surgery was not very effectively one thing or the other — intelligently antiseptic or aseptic. We then swabbed our patients'



wounds with sea sponges that were merely wrung out in tap water and soaked overnight in crocks of carbolic acid, to be used again the next day.

Marcy's voice at the London Congress during that celebrated symposium "On the Causes of Failure in the Primary Healing of Wounds" was a small one compared with the thunders of Lawson Tait against the antiseptic methods and of Richard Volkmann in support of them. The time finally came for Lister to close the debate. He made no particular defense of any special technique. He contented himself with the description of further carefully conducted experiments (which he had been obliged to perform abroad, owing to the recent anti-vivisection law), showing among other things that blood serum itself possesses bactericidal properties and that the actual closure of a wound is not essential to perfect healing, for healing in the absence of inflammation may occur in an open wound filled with a blood clot if it be properly covered and left alone.

Out of all the Congressists in that vast assembly there were perhaps only two besides Lister who could by any possibility have foreseen that these new experiments had sounded the knell of active surgical antiseptics and at the same time had announced the birth of something far better, even though more difficult to carry out. These two, so soon after the Franco-Prussian War, were difficult to bring together, but it was somehow accomplished. And though it is not even recorded in the copious *Transactions* of the Congress, unquestionably the most important happening of that eventful week of August 1881 was when Robert Koch, in the presence of Lister and Pasteur, one afternoon at King's College demonstrated his new method of cultivating bacteria on solid media and

showed the efficacy of steam sterilization. Meanwhile, possibly that very afternoon, Clifford Allbutt was reading at one session on Scrofulous Glands of the Neck, and Theodor Kocher at another on Strumous Disease of the Knee Joint, wholly unaware that on his solid media this same German doctor had, likely enough, already cultivated the minute bacilli which proved that the scrofula, and struma, and tubercle of our forefathers were one and the same disease.

But to the Congress at large all this about microbic infection was a minor issue. There were far greater attractions with Charcot to hear, and Donders, and Hughlings Jackson on epilepsy, and Virchow in defense of experimentation on animals, and Thomas Huxley on the connection of the biological sciences with Medicine, and our own John Shaw Billings on medical bibliography, the first volume of the *Index Catalogue*, one of the major contributions of this country to scientific medicine, having just been published.

So in the year of 1881, two months after this society had celebrated its modest centennial, the great figures of the medical world were gathered in London; their words we still quote; on their broad generalizations we still build. In 1913 another, the last of the great international congresses, was again held in London, and, though the gathering was double the size, with the possible exception of Paul Ehrlich there was no one to be mentioned in the same breath with those whose names I have briefly recalled. Meanwhile in those glorious years that come between Pasteur's demonstration of protective inoculation against anthrax and the introduction by Ehrlich of chemico-therapeutics which made pharmacology a science, Medicine found herself wholly transformed.

And then, in another year — the disaster, from the ruins of which the world is still trying to extricate itself.

1931

Every generation is prone to overvalue its own accomplishments and to feel that it has lived through the most eventful era in history. So it is music in our ears to be told that this recent half century has seen the greatest progress of all. Not everyone is entirely happy about it, for with standardization and mass production and the mechanical robot has come a vast deal of unemployment, and any day some new machine or centralized control may throw still more of us out of work. But despite the talk there is nothing new in this. Five centuries ago countless scribes and illuminators were obliged to find other jobs because of that robot the printing press, with its movable type, an unwelcome invention which transformed their world far more than has the gas-combustion engine ours.

Nevertheless, science and those who apply its discoveries have in these recent years provided us with an amazing hodge-podge of novel and revolutionizing things to which we are obliged to adjust ourselves whether we wholly like it or not. The telephone, the incandescent lamp, the dictaphone and the typewriter, the automobile and the aeroplane, the x-ray and radium, wireless messages and vitamins, motion pictures and television, have come, for better or for worse, permanently to change our very manner of thought of life and of living. From Zeppelin to submarine, the most fanciful imaginings of Jules Verne have been outdone in fact. All that remains is for the cow to jump over the moon, and she may be expected



to hop off any day now that two Belgian physicists have found the stratosphere to be so accessible and such a pleasant place when you get there.

There is a disagreement among modern astronomers as to whether the universe is expanding at such a rate it will some day wholly disintegrate, or whether it is constantly regenerating itself by cosmic rays let loose while helium atoms are in the process of formation. We might well ask whether Medicine too is not expanding at such a rate it is likely to disintegrate, and whether something can't be done to ensure the constant regeneration of those fundamental principles which from the beginning have made our professional standing and solidarity what they are. Since Medicine has become "news" our ancient code of ethics tends to be neglected — along with the Ten Commandments and the Golden Rule — as something unsuited for these advanced times. Huge hospitals have been built, richly endowed by great foundations. Magnificent laboratories fully equipped for research are at every hand awaiting the right people to utilize them for further discoveries which, like the cause of cancer, will bring fame to someone. Meanwhile the torch which passed in turn from Italy to Holland to Scotland to England to France to Austria and Germany has passed, or is in process of being passed, to our own country, where foreign medical graduates now flock as our ambitious and favored graduates once flocked abroad.

Are we entirely prepared for this? And are we, in our process of rapid expansion, not running the risk of losing something precious that made our medical forebears what they were? Medicine has always utilized scientific discoveries, but can never become a science so long as it has to do with individual human beings. As of old, life is short,

the art long, opportunity fleeting, and yet our preliminary requirements for all who wish to join our ranks are such that an education for Medicine has come to be drawn out to cover a period of six to eight years. The practising doctor of today will express his gratitude to those who have given him some conception of the sciences which have sprung from the loins of Medicine; but he will join with the doctors of all time in saying: "I honor as my father the man who taught me the art."

I can imagine old Dr. Holyoke, with whom in his Salem home thirty-five apprentices in succession had worked elbow to elbow, appearing among us and bluntly asking questions embarrassingly difficult to answer:—

"Your scientific progress is very wonderful, but are you on the whole training your students to be as good doctors as we made of them in the old days, and do you yourselves hold as strong a position in your several communities as the doctors once held? If so, who are these chiropractors and Christian Science healers that infest the land and thrive on that inherent trait of mankind—blind credulity? Does not the long and expensive training in science now demanded for a medical degree have something to do with their birth and prosperity, and the sum total explain in part the high cost of medical care?

"What are these richly endowed anti-vaccination and anti-vivisection societies that I am told continue, with the aid of clever lawyers, to pester our profession and hamper its progress? Are leaders in this Society no longer to be found serving in the Legislature? Have you forgotten that two of our early members were Governors and three of them Lieutenant Governors of the

Commonwealth? Your professional public-health officials must certainly exercise a greater influence on public opinion than did those amateur ones who volunteered their service in my later days.

“Did not my friend and neighbor, Joshua Fisher of Beverly, one-time president of this Society for a term of eight years, get the Legislature to pass what laws were needed for proper licensure, and at one time become a State Senator, and at his end establish the professorship at Harvard that made possible the services of Asa Gray? You never heard of him! Well, you certainly have heard of my protégé, John Warren, and my pupil, James Jackson, and his junior colleague, Jacob Bigelow, most brilliant of them all. Men who are poets and wits don’t always carry weight. But here was one seething with ideas, one to whom people listened, one who got things done — one who could by earnest, persistent, and intelligent persuasion (to borrow the phrase I’ve just heard) ‘ripen his time.’ The first Institute of Technology; the first rural cemetery; a great botanist who utilized his knowledge not to put more drugs in the pharmacopœia but, by eliminating the useless ones, to simplify the treatment of diseases most of which, given a chance, recover of themselves. And, being an active practitioner universally respected and beloved, did he not do more for the public health than specialists in sanitation are likely to accomplish without the people behind them? We didn’t know a century ago that the strumous diatheses of children were akin to tubercle, much less that they came from infected cow’s milk. But this you have fully understood for nigh thirty years, thanks to a man named Theobald Smith, and yet are only now taking steps to legislate against it.



"We had to fight the anti-dissectionists for the sake of anatomy, so why don't you for the sake of your modern physiology get a bill passed, as we did, permitting you to go on with animal experimentation unmolested? Do I understand that your premedical science teachers have had no experience at the bedside? If this is so, how can they be proper instructors of those who are to become worthy members of this ancient society?

"The public-health officer is taking the place of the doctor, did I hear someone say, with this new slogan of preventive medicine? Yes, what's been done to lessen typhoid and malaria and yellow fever is all most creditable, but could he keep out cholera more successfully than we did? And what of these modern pestilences with the long names — poliomyelitis, encephalitis, and influenzal pneumonia — of which I hear so much? If they cannot as yet be prevented, what then? Some doctor must care for those who are struck down by them.

"The worth of an ounce of prevention was an adage old even in my day. The longest period I was ever away from my practice was in the spring of 1764, when, after making my will, I came here to be inoculated with small-pox virus by my friend Perkins, who kept me in quarantine for twenty-nine days. I then went home and as a self-appointed health officer inoculated two hundred of my Salem people with only two fatalities, whereas two out of three were dying elsewhere from the scourge taken in the ordinary way. It was the proper thing to do; the people knew me, and whether they liked it or not they took my word for it.

"But what this old-time inoculation might accomplish was a mere drop in the bucket to what Edward Jenner did single-handed, and he too a mere country doctor. No

pestilence ever spread with the speed the news was carried round the world that smallpox need be no more. The dead tell no tales, but the pockmarked survivors were for all to see, and they were once to be met at every turning in the lanes of Boston. All this, I fear, is forgotten with a movement now on foot to discredit vaccination and to rescind our hard-won laws. The natural way to combat such a movement is for the family doctor to say what is necessary in the legislator's home. But it would seem that a modern apartment with its victrola, its radio set and bridge table, is incompatible with the idea of a home and a family life and a family doctor — the three safeguards of happiness and health.

“Does not your present-day boast that you have greatly increased the expectancy of life merely mean that there are going to be just so many more persons in the world growing old who some day will be in need of a common-sense practitioner to advise them how best to get along with their stiffening blood vessels, their troublesome kidneys, their bronchitis and indigestion and diabetes and a thousand other things; and no less of a skillful surgeon to set their broken bones, remove their enlarged prostates, take out their tumors, cure their ruptures, and what not — *ocius, jucunde et tuto*; swiftly, sympathetically, and safely? Are you, either in your older or in your newer school of medicine, educating, and in the right way, the proper sort of people to be *our* successors and *yours* in work of this kind?

“There are specialists, I'm told, for every malady, for every age, for every viscus, for each and every orifice, to whom the people go; but how can they learn to whom to go, or whether to go at all, without the sage advice of a trusted general practitioner? Can the de-

pendability and usefulness of these unostentatious public servants — dim figures, to be sure, in the background of history's canvas — ever be supplanted by anything better? Theirs was the broad and comprehensive view; your specialists are said to be persons who know more and more about less and less — very useful, to be sure, on occasions, but not always the safest persons first to consult.

“Those thirty-one men over whom I presided not so long ago had their strong differences of opinion, but they shared the common ground of culture, knew their classics, and at the same time had been taught to write good English with a legible hand, even though they cut their own quills, mixed their own ink, and made the best possible use of what handmade paper was available. Can you do as well, or do you merely talk your correspondence into a machine for someone (who corrects your grammar and who knows how to spell) subsequently to put through another machine on to machine-made paper?

“To be sure, we knew little of chemistry. Medical chemistry was then in its antiphlogistic infancy; but even so, Lavoisier and Cavendish and Rutherford and Berthollet, not to speak of Humphry Davy and those Josephs — Black and Priestley — knew a thing or two. And after all, was not botany an equally good discipline? It at least afforded us a deal of pleasure on our country rounds, and took doctors to their gardens and orchards in their old age. Some of them, to be sure, like Samuel Philbrick, broke their necks of a Sunday morning pruning apple trees, but that's a more picturesque end than dropping dead on a golf course on the Sabbath. With all your synthetic drugs, what have you today to take the



place of the bark, of opium, of foxglove and belladonna and ipecac — and I might add Jamaica rum? You still prescribe Dover's powder, I understand — and probably not enough of it.

“When we first came together to found this Society the population of Boston was estimated at 12,000 persons. It had increased to 60,000 in 1831, to over 300,000 in 1881; and today I'm told about 1,500,000 are crowded into your metropolitan area. At this rate, with a fivefold increase every fifty years, by the time of our two-hundredth anniversary we may expect Greater Boston to have a population of some seven million. With the most perfect health organization conceivable, at least three or four times the present number of practising doctors will be needed for this thriving place some of you will live to see.

“My own Alma Mater at present not only restricts the number of its matriculants for a medical degree but, by pushing the entrance requirements back into college, excludes from our guild many we would welcome into it. Having been slow to make up their minds, they are now driven into business, which, to salve our conscience, we are elevating by the boot straps into a ‘profession.’ New schools — coeducational ones at that — are here and may teach us of the older school a lesson just as once did that flourishing school in the Berkshires. One of them bears the family name of my old friend Cotton Tufts of Weymouth, one of the secondary founders who never missed a meeting of this Society, and whose great-grandfather formerly owned the very acres of land on which Tufts College is built. And there is that other vigorous upstart, Boston University, with its thriving medical department which in another fifty years will be

looked upon as one of the older schools. Will these three at the time of our bicentenary be able to supply the necessary doctors for this community, or will other schools have to come into existence?

"Then, too, I'm puzzled not a little by these life-extension examinations. It looks like a good thing for someone — not necessarily the patient. An insurance examiner, after listening to the heart, takes a specimen of urine and lets it go at that, well aware that it's often extraordinarily difficult to tell what's wrong with people who complain of some definite symptoms, let alone those who have none. I should think these periodic examinations, with their tappings and probings and listenings and testings for something wrong, would give apprehensive people what we used to call the vapors. Isn't expectancy of life after all pretty much a matter of heredity, combined with decent living? To be sure, you keep a lot of children alive that would tearfully have been buried in my day. Sad enough. But isn't it better to have plenty to begin with rather than to teach people who ought to be having them how to escape the responsibility?

"From what I've glimpsed today of the folks who pass their time riding about with no apparent purpose in these horseless contraptions that crowd your broad thoroughfares, too many people of the wrong kind are kept going in your modern world. The able-bodied ones, still able to walk across the street, are rapidly getting killed off; the weak and feeble are protected, survive, and soon will be the only ones left to propagate the species. In my day it was just the reverse; only the vigorous survived to marry and beget children, any one of whom with plain food, hard work, good habits, an outdoor life, and that form of morality which includes piety, might be expected

to keep going as long as I did — and that's long enough.

“But I've already said unnecessarily much — even for an old man and a back number. When I come again in 1981 we shall then see — what we shall see. Human nature being what it is, and having changed not at all since history began to be written, we may suppose that people will continue at odd times to get ill or get injured and as of old will need a doctor and will prefer one of their own personal selection. And it will still be the duty of someone to train for this express purpose the most likely, wholesome, intelligent, and cultured young men we can attract into what will continue to be the greatest of the professions. God be with you.”

With this benediction the old man with a bow departs from the hall, climbs into his one-horse gig, and at the street crossing, scorning that modern impediment to progress, the red light, disappears in the general direction of Salem.



### III

#### MEDICINE AT THE CROSSROADS

IN April of 1918, a Canadian casualty clearing station had been newly set up, in the emergency of that critical time, at a hamlet called Pernes, somewhere near Béthune, in Flanders. The surgical "teams," as they were called, hurriedly assembled from where they could be spared, were working on day and night shifts like factory hands to keep abreast of the raw material fed in to them. We dealt with wounds — not the man. For him we had no time. Some far-away government took that responsibility and is still paying for it. In the midst of this, on an afternoon while in the course of one more gruesome task, I was suddenly told by a much annoyed Commanding Officer that orders had been received from the A. E. F. for me to report forthwith at a place called Langres.

Anything may happen in time of war, and one asks not why. Langres, as it turned out, was a perfectly safe hill town halfway across France between the headwaters of the Marne and the Meuse. And, not knowing whether I was to be demoted for some breach of discipline or made commander-in-chief, with ill-concealed agitation I presented myself there in due course before the C. O. of what proved to be a training school for army medical officers. I was informed I had arrived just in time to give the noon lecture on battle injuries of the head.

*Presidential address, read before the Congress of Physicians and Surgeons at Washington, D. C., May 9, 1933. Reprinted from the "Journal of the American Medical Association," May 20, 1933.*

Of that ill-prepared and futile lecture — after which I was dismissed — the less said the better. I was picked up by a sympathetic friend permanently attached in Langres — a first lieutenant, considerably my senior in years, who in normal times was a professorial colleague. He offered to take me to lunch at his mess before my departure. On the way there — and I at last approach the point of this recital — we passed, in a narrow street, the open window of a shop in which, concentrated on his work, there sat before a bench an oldish man in shirt sleeves and a leather apron making jackknives. He wasn't making parts of knives, but the whole knife — steel blades, bone handle, and all; and some of them, finished, were hanging in the window alongside a much faded blue tunic with a wound stripe on the sleeve, which told its own story.

Were his knives for sale? Yes; since times were hard, only six francs for the better ones, and we could step in and have a look if we desired. A pocket knife may sometimes be useful to cut red tape, and when I had made a selection he examined the knife carefully, put it back, and took another which he said was a better one. If I didn't lose it, it would last all my days; and would I notice the spring — no breaking of fingernails with a carefully made and tested knife like this — a masterpiece if he said so as shouldn't. So admiring was he of his handiwork I began to think he would not bring himself to part with it; but his decision to do so was suddenly stiffened by the entry from a back dwelling-room of his wife and two children — future jackknife-makers in all probability.

Not long after this, I somehow or other happened to sit in at an informal discussion between two French offi-

cers and two American efficiency experts, members of an advisory commission that had been sent to France. Plainly the reason the Allies had not already won the war was their want of industrial organization, their inability, for lack of proper machinery and modern methods, to turn their raw materials rapidly enough into the finished product and to give it wide distribution. The only way to do this effectively was the way we made motorcars in America, each workman contributing his small part at high speed, in short hours, for good wages.

After much more in similar vein, the senior French officer finally said: "This may all be true, gentlemen, but it would be almost better for us to lose the war. The French artisan works because he likes to, often at his home, can turn his hand to many things, is frugal and content with small earnings, can usually make, pretty much with his own tools and hands, some finished product which he can sell. So, even in trying times like these, he gets independently to work as his own employer, somehow supports himself, and merely asks to be left alone. Were he forced into being a piecework specialist he would lose his resourcefulness and independence of action. Should this happen on a large scale, discontent would surely follow and our social order fall to the ground."

That night I fell asleep thinking of the Langres knife-maker. Every foot-soldier should have a jackknife — not just an occasional officer. There must be a more even distribution of bigger and better and sharper knives. All independent knife-makers in the emergency are congregated in a factory where some do the blades, some the handles, some the assembling of parts, the labeling and packing, the advertising, the selling, the foreign distribution — everyone a specialist in his own line. It becomes



a great business, a marvel of efficiency. Jackknives are quoted on the stock market and prices soar. New machinery is installed whereby synthetic knives can be turned out by the million almost without aid of human hand — and everyone knows the awakening. A glut on the market, a closed factory, all knife-makers out of work; and even those few who still remember how to fashion a good, complete jackknife from the raw materials, no longer able to sell them, join the others, march on Paris behind the red flag of protest, and demand from the government either a dole or a new sorting of the cards. Whereupon a group of well-intentioned philanthropists, sociologists, economists, and lawyers, together with two former knife-makers, one now a specialist in corkscrews, the other in synthetic-bone handles, are appointed to study in all its aspects the relation of knife-making to the common weal.

This, after all, is not much of a story — partly a dream at that — and perhaps only by a stretch has it anything to do with the present crux in which the medical profession finds itself, overmanned, overspecialized (behold this Congress!), like other necessities of life poorly distributed, an expensive luxury for those of modest means and the subject of investigation by a commission which threatens us with socialization unless we promptly do something to alter our spots, to cast off our long-conditioned reflexes, and put ourselves on a modern chain-store business basis. This, for the next twenty-five years at least, and that's as far ahead as there is need to plan, will serve to make everyone — including the doctor — happy, healthy, and wise.

A lawyer on the commission goes so far as to use the ugly word "coercion," and when a friend, familiar with jurisprudence, was asked just what that meant he said

“government by force.” And to the question whether it would be possible similarly to “coerce” the legal profession into caring for persons of modest means on the same parity as the well-to-do, he replied: “No, the lawyers are too smart and there is too large a percentage of them in our legislative bodies ever to bring such a thing about.”

A recent leader of public opinion openly states that most of those at present dealing with the sick — meaning more specifically the doctor — have their faces turned toward the past. If history but repeats itself, where else but from the past *can* we learn anything? We certainly can draw little comfort and few admirable lessons from the late present. Nor would this seem to be the time to fly to evils we know not of, but rather to stick firmly to what has proved in the long run the great stabilizer — every honest man with faith, hope, and a stout heart going about his own business, with swift punishment for dishonesty and crime. And lest we forget, let us for a moment in reality *turn* our faces to the past: —

The prevalence of crime he assigned to want of employment among the poor, to the idleness and the luxury of the well-to-do, to the recklessness with which the rulers engaged in war, and to the readiness with which merchants were converting arable land into pasture; villages were laid waste and the opportunity of labor was greatly diminished in order to fill the coffers of capitalists. Discharged soldiers, troops of dismissed retainers from the households of the gentry, who, after a life of idleness, were thrown on their own resources, ploughmen and peasants whose services were no longer required by the sheep farmers, perilously swelled the ranks of the unemployed and made thieving the only means of livelihood for thousands of the population. A more even distribution of wealth was essential to the country's salvation. To this end were necessary the enjoyment of the blessings of peace, restrictions on the cupidity of the capitalist, improved education of the humbler classes, and the encouragement of new industries.



While this might have been written of many times and places since then, it in effect was what the old sailor Raphael Hythloday had to say concerning the status of England in the sixteenth century. Things were quite different, he said, on the island of Utopia, whence he had recently returned. There everyone lived in complete social happiness and brotherly love; disdaining money, they wanted for nothing, not even hospital care, and could worship as they chose.

Needless to say, when the crisis came in his own affairs, the author of this more often quoted than read allegory, with the inconsistency that affects mankind, failed to live up to his expressed ideals, attempted to coerce others to his own theological beliefs, and lost his head in the process. Social reformers, no less well intentioned and lovable characters than was Sir Thomas More, sometimes lose their heads though not always in just that way. More's great friend Erasmus wrote a famous skit in praise of folly, and More doubtless knew well enough that "the greatest folly of which a man is capable is to sit down with slate and pencil to plan out a new social world," though we waited almost four hundred years for a student of society to say just that.

Heaven knows there are plenty of things the commoner, including most doctors, would like to see corrected, and the sooner the better, — dishonesty among those entrusted with other people's savings, less interest in legal procedure and more justice among the lawyers, as examples, — and the doctor wonders why, just at this time, when in spite of widespread distress and anxiety the health of the people as a whole is better than ever, he should be particularly singled out and told if he doesn't distribute himself more evenly, stop specializing, and charge less



he'll be coerced into doing so. He thinks this highly peculiar, for hasn't he always striven with ever-increasing success to eliminate one after another the diseases whose particular care provides his bread and butter? And has he not shared with the priest, from the beginning of the record, in giving a large part of his time to the indigent poor in whom business, finance, and the law may be theoretically interested without showing it in so direct and practical a way?

Lay reformers speak lightly of his code of ethics as something long since outworn, but so far it has prevented him, for one thing, from capitalizing for his own benefit his inventions and therapeutic discoveries. If Jenner and Lister had been trained in the point of view of modern business efficiency, instead of being just a plain, improvident country doctor and a young hospital surgeon whose only desire was to help others and to stand well in the esteem of their professional fellows, what then? For the discovery of the practical application of ether anæsthesia, Medicine has no corresponding hero, because someone, having unethically taken out a patent, proposed to sell it to the government for a large sum and very nearly succeeded in doing so — all of which is thoroughly ventilated in five hundred and eighty-two printed pages of testimony before a select committee of the United States Senate to their great waste of time. For what could be their understanding of an ancient profession's precepts in regard to what its votaries may and may not properly do?

It is preposterous, writes the efficiency expert, to say that a man, even a doctor, is not entitled to what he can make out of his inventions. The medical man of the future will pay more attention to prevention than to cure, says the young D. P. H. to his hostess as he accepts his second

cocktail. The social reformer, stopping at the corner store for his favorite brand of cigarettes, purchases a sixty-cent bottle of the latest "pectoral" which the clerk says will be good for his (easily preventable) chronic cough; and, dear me, he's almost forgotten his promise to fetch home Aunt Maria's weekly bottle of Lydia E.'s Restorer at \$1.25; for, though it isn't so restoring as when it contained forty per cent, she still takes it after meals.

Knowing their frailties, the doctor doesn't think over-much of his fellow kind while doing what he can to prevent, alleviate, or cure their ills. He at least doesn't over-rate them and treats like anyone else the chiropractor and the science healer (secretly) and the veteran who draws a total disability allowance yet is on the police force, and even the prosperous-looking uplifter of society, knowing that each of them will look surprised when asked to pay for his services and that, so far as concerns *them*, he'll soon join the ranks of others never thought of.

It is not with such as these that the doctor shows his best side. He feels far more at home with the ordinary, self-respecting people of modest means who don't expect, on this earth, to find green pastures provided for them with ten-cent cigars, a two-car garage, and a fish fry in every dinner pail. They frankly say just what their circumstances are and what they can pay and when. For them, too, he can do no more than his best and only wishes it could be better, and cuts their bill in half or cancels it altogether. They never forget him, but send him each year a note on the anniversary of the operation and, like enough, a pair of carpet slippers for Christmas which he can't use, for he's in his boots till bedtime. But this he doesn't admit when making his acknowledgment, for he cherishes their remembrance — even their grati-

tude, though pretending not to like it. And, as a matter of experience, those who can least afford it are the ones among his patients most eager to make a prompt cash payment to him even though a large part of every hard-earned dollar goes to various unseen persons whom they are making rich, and to whom they feel obligated in no comparable way.

In his common-sense discussion of the ever-shifting manners, mores, and morals of society before the undergraduates at Yale a generation ago, William Graham Sumner had much to say about a particular man who is never thought of and on whom the burden always falls. In the complexity and rivalry of human interests, he is the one who in the end always has to pay — even for the efforts of social reformers to make the world over.

For once let us look up and consider his case, for the characteristic of all social doctors is that they fix their minds on some man or group of men whose circumstance appeals to the sympathies and imagination, and they plan remedies addressed to the particular trouble. They do not understand that all the parts of society hold together and that forces which are set in action act and react throughout the whole organism until an equilibrium is produced by a readjustment of all interests and rights. They therefore ignore entirely the source from which they must draw all the energy which they employ in their remedies, and they ignore all the effects on other members of society than the ones they have in view. They are always under the dominion of the superstition of government, and, forgetting that a government produces nothing at all, they leave out of sight the first fact to be remembered in all social discussion — that the state cannot get a cent for any man without taking it from some other man, and this latter must be a man who has produced and saved it.

Now in the issue before us, if I may venture to paraphrase Sumner, everyone's sympathy, including that of



reformer *A* and his friend *B* who stands financially behind him, lies with the self-respecting person *X* of modest income, who finds it difficult to meet the expense of medical care in case of sudden illness or accident from some unpredictable and unpreventable cause. For the sake of *X*, this particular evil must be remedied by a statute which will determine, not what *A* and *B* *might* do for *X* themselves, for they would need no legislation for that, but what an intermediary *C* (in this instance the doctor) *must* do for him.

Now *X*, who has not yet been consulted, will be likely to say when he gets wind of it that, after all, he doubts whether he will ever need doctor *C*, even should he prefer him, when the time comes, to another medical man of his acquaintance. What is more, he is already burdened with more insurance and taxes than he can afford. He is already paying to support the local, state, and an expanding federal board of health, for prisons to accommodate the rapidly increasing number of criminals, for institutions to house the even more rapidly increasing insane and feeble-minded, for hospitals to care for that organized group calling themselves "veterans," who may not increase in number but do in their demands, which amounts to the same thing.

So he and his neighbors conclude, in accordance with Sumner's social philosophy, that they as usual will again foot the bills, just as their common kind originally paid, little by little, all that now fills the coffers of *A*'s philanthropic friend *B* of the foundation which is backing the proposal. And from all one can learn, so far as the public purse is concerned, the old adage which likens it to holy water still holds true — those who have access to it help themselves.

Unfortunately, *X* is not always so sensible a fellow as to make a family friend, confidant, and adviser of one or the other rival practitioners in his small town. And when the *X*'s gravitate to the city and shift from place to place when there, you and I know they are more apt to choose an abode convenient to a cinema and a drugstore than to a doctor. When a member of the family takes ill and fails to respond to the usual proprietary remedy, a neighbor is consulted who turns out to be a Christian Scientist; or another who suggests the particular chiropractor who for five dollars cured Uncle John of the flu at one sitting; or a third who has just seen in the morning paper the name of a perfectly swell professor who has just done something wonderful at the New Medical Center to a woman who swallowed her false teeth.

Acting on this suggestion, the family calls the "professor" on the telephone and asks if he won't please come immediately to number so-and-so in Harlem to see a sick woman just in his line of work. No, they have no family doctor; so he asks if there is not a doctor in the neighborhood they can more conveniently and promptly call in. "Yes, there is a Dr. Jones just around the corner, but we don't know him, as we've only lived here nine months and never needed a doctor before, and anyhow he is only a house-to-house doctor, and the case is so urgent we need a specialist at once and we can't afford to go to the hospital, it's so expensive."

Our urban populations are largely composed of people of just this sort, and what's to be done to save them against themselves and keep them from "shopping around," as it's called? In this particular emergency one can't stop to theorize about systems of voluntary *versus* compulsory insurance, the chief burden of which would fall as usual

on the average provident man of good habits; the matter must be attended to at once.

Ten chances to one there is nothing seriously wrong with this panicky woman, but the single chance can't be taken and the "swell professor," before he hangs up, if he is the kind of man I know him to be, tells the person at the other end of the line he regrets he can't come himself but he will shortly have someone there to see what can be done. He has Dr. Jones's office notified that there is a sick woman near by, and will Dr. Jones please see her when he conveniently can and say he comes at the "professor's" (God save the mark!) special request; and will he then take the case in charge or send her to a hospital, as he thinks best.

Here the chances are also ten to one that the local doctor will prove capable and efficient, will promptly grasp the situation, know how to deal with it, and gain the confidence of the family and their friends. "Such a nice doctor, so scientific; and to think we've never known about him before! Why, he cured Mother's trouble in one visit and only charged two dollars, though he's a great friend of the professor at the Medical Center whose name was in the paper." This, with a definite understanding that his back bills are to be paid before yours and mine, is the correct way to deal with the problem of the general practitioner, and it is more often followed than people believe.

But who is this house-to-house doctor so suddenly sprung upon us? He has supposedly gone out of business, pinched on one side by the public-health officer and periodic life-extension examiners, and on the other side by what are called the scientific doctors, including ourselves, the specialists in our respective hospitals. He has long been so far forgotten he should by this time be an



extinct species. Indeed, it is authoritatively said that the automobile and the associated highways, together with the present "setup" of society, have driven out the unmethodical, silk-hatted, bewhiskered, lovable, and friendly general practitioner.

This scornful picture of the practising doctor shows lack of knowledge, besides being somewhat cruel. Whiskers and a silk hat don't make the man. Fashion makes the whiskers; and the boys in blue were as good soldiers for all their beards and Bull Durham as were those in khaki with their clean faces and fags — too many at that. Gillette and Henry Ford and the Dukes may through advertising and salesmanship change our appearance, our manner of getting about, and incite us to bad habits — incidentally with great profit to themselves. But even though his whiskers have gone with his tall hat, if he ever had one, and he comes in a cheap motorcar instead of behind a horse, and nervously smokes too many cigarettes, the general practitioner or family doctor is still with us and plays the same important rôle he always has played.

For nine tenths of what he is called upon to do "the operating table and the microscope and the Röntgen ray and the trained nurse and the mechanotherapeutist" are wholly *unnecessary*; and when they are needed he usually knows where to get at them. All he asks from his school is that, under teachers who know from experience rather than theory what his lifework is to be, he may get the sort of well-rounded training which will enable him to keep abreast of the changing times while in city or country, with dignity and propriety, he engages in the quiet art of healing.

Such are the men who represent the backbone of our profession, and for each of them there are countless de-

voted patients and for each patient whole families whose voice in our discussions has not as yet been heard. And were it heard it would be, in effect, what it always has been: "So long as I am well, I forget the doctor — and his bills which he often neglects to render; but he is always there in case of need except during a vacation, something I notice he is more apt to prescribe for others than take himself."

It is to the self-sacrificing spirit of the sagacious practising doctor, not to the likes of us in this, that, or the other line of special work, or the medical scientist, or the public-health official, that from the earliest times tribute has been paid.

Honour the physician because of the need thou hast of him; for the most High hath created him . . . and in the sight of great men he shall be praised. All healing is from God. He hath created medicines out of the earth, whose virtue is come to the knowledge of men who shall thereby cure and allay pain.

So in effect, in the *Book of Wisdom*, did the son of Sirach called Ecclesiasticus admonish the average man and potential patient, who differs no whit today from some nineteen centuries ago. He is no less gullible and superstitious, no less negligent and sinful, no less certain from time to time to betake himself to a physician, from whom he expects, and usually gets, not only understanding and sympathy but an honest opinion — accompanied by emphatic directions which it is to be hoped he will follow longer than he does his own good resolutions made each New Year's eve.

A remark, easily traceable to its source, has been often repeated to the effect that the family doctor will come to be replaced and crowded out by the local health officer. Preventive measures against the spread of disease are no

new thing. The very word "quarantine" and its mystic forty days and forty nights are lost in the darkness of Oriental history long before Hygeia, the daughter of Æsculapius, was worshiped as a health-protecting divinity. Even today, when we are said to be more "scientific," our legal enactments relating to the public health still apply chiefly to the transmissible diseases; and the doctor has had much to do with bringing about the sanitary well-being of the community by hammering into the ears of reluctant legislators the necessity of permanent, nonpolitical, state-paid officers whose enlarging powers become increasingly international in scope. What the doctor asks and expects of them is that the hard-won ground he has gained be held and consolidated, so he can quietly go about his preparations to gain more, by pushing out another salient when all is ready for a concerted attack.

By the combined efforts of both groups, doctor and sanitary official, the expectancy of life has been greatly prolonged — and will be more so before we are through. Yet, while we point to this triumph, there are just so many more people who live longer only to be overtaken, the health official with the rest, by unforeseen and unpreventable accidents for which they seek the best surgeon they can find, or by some malady for which they demand the very best physician — like enough a highly trained specialist.

In short, for every disease from the beginning of time we have learned to escape by prevention, or to alleviate and even cure by drugs, there remain disorders beyond enumeration we cannot yet dodge because we don't know their cause. And even when this slowly and laboriously is determined for one malady after another, so that it may in turn be eliminated, would people only obey the



laws of health, something else promptly crops up to take its place, for hitherto unsuspected derangements of our poor bodies are being detected and described almost daily.

Three fifths of the practice of medicine depends on common sense, a knowledge of people and of human reactions. More than half of the remainder is technological and mechanical, the work of those medically trained artisans we call surgeons. What remains may be termed preventive; and this in bulk very properly and inevitably comes to be taken over by the state, though people, being what they are, find ways of evading a disagreeable statute as in the case of compulsory vaccination — intended for others but not themselves. Not everybody obeys the traffic light, and every regulation breeds its jay-walkers and its racketeers.

Legislation and attempted coercion do not always accomplish what reformers anticipate. The country's recent quixotic experience with prohibition, the most important health measure ever sanctioned by a government, however well intentioned probably set back rather than quickened that much-to-be-desired goal of national temperance which by natural processes was slowly gaining ground. At great expense, a commission sat long and wearily on this subject, again without coming to a unanimous voice. And finally the mass of sober, obscure people of small means, who as usual were bearing the chief expense of enforcing a law which was breeding crime and disobedience, though inarticulate, at least could vote. So almost as one they decided, in spite of the lost ground and its disheartening confusion, to take a fresh start toward the slow cultivation of national restraint in the use of intoxicants. "The fallacy," said Sumner, "of all prohibitory, sumptuary,

and moral legislation to protect people against themselves is the same.”

There has been much idle talk, too, regarding scientific medicine and the modern scientific doctor who, with his ingenious appliances and mathematical exactitude, has come to supplant the old-fashioned “practical” doctor. For hasn’t he — or mostly his trained technicians — taken our blood pressure, our electrocardiograms, our basal metabolic rate, lumbar-punctured us, ophthalmoscoped us, ventriculogramed us, x-rayed us from top to toe, studied under the microscope everything we can expel for him besides drawing off our blood for the same purpose, looked in all our orifices, tickled the soles of our feet, charted our calories, our calcium and phosphorus and nitrogen intake and output? It’s peculiar, after all that time and expense, they can’t seem to tell why Johnny has fits; perhaps blunt old Dr. Brown upcountry was right when he said that Johnny, during that attack of flu, had what *he* would call inflammation of the brain and the city doctors encephalitis lethargica — for which they charged more. But, whatever it was called, he was sorry to say it couldn’t have been prevented, nor was there much he or anyone else could do for it, and we’d just have to grin and bear it.

As a matter of fact, it will be a great shock to laymen to learn that a great part of what is called scientific medicine is a fetish and wholly *unscientific*. We have instruments of precision in increasing numbers with which we and our hospital assistants at untold expense make tests and take observations, the vast majority of which are but supplementary to, and as *nothing* compared with, the careful study of the patient by a keen observer using his eyes and ears and fingers and a few simple aids. The practice of medicine is an art and can never approach being a

science, even though it may adopt and use for its purposes certain instruments originally designed in the process of scientific research. In the case of Mary who got behind at school it has been found, to be sure, that her basal metabolic rate was minus five per cent, so she is now taking thyroid extract, and though it makes her nervous it's scientifically correct, the doctor says, and she must keep on with it.

Life is a competitive episode, and, since capabilities differ and opportunities vary, some will prosper and some will not. This is sad, but it is futile to complain of these inequalities, for they are biologically inevitable. That all men are born free and equal is a noble sentiment, but in life's struggle experience shows they don't long remain so. "Liberty, equality, and fraternity" is another republican shibboleth as impracticable and unattainable as the pole-star of Marxism in any social group much larger than the family, and not always possible there. A somewhat more ancient idealism, expressed in another three words, may be found in the thirteenth chapter of First Corinthians, and from that source the man who does his best to comfort and heal has inherited the belief that the greatest of the three is charity.

In spite of all the discouraging things they are permitted to learn about the units composing society, the doctor and the priest continue to have not only hope for but faith in their fellow men, and expect them, in spite of their frailties, to be unselfish and honest till they prove themselves otherwise; whereas in trade, politics, and the law, we are told, a man is primarily taken to be self-seeking until he proves the contrary. It may amount to the same thing in the end, but it at least shows a different approach; and it may partly explain why the doctor, com-



pared with others, is known to be a poor business man. This, after all, may not be an unadmirable trait even though the dollar is taken to be the common measure of "success" in our present-day world, which looks scornfully on his financial incompetence.

I recall once being at 13 Norham Gardens in Oxford when the Regius Professor received a cable from a Maharaja in India: "Request you see son injured yesterday's polo game. God will pay the bills." The Regius promptly acted on this request, cabled reassurances to the Maharaja, and charged it up to the Almighty, already heavily in his debt. No, the doctor in the past has not been good at business, and most of those who happen to possess that talent soon leave the profession for fields where they more properly belong.

Why he should refrain from forcible collection of his unpaid bills; why he does not patent some of his prescriptions, inventions, and discoveries and make a fortune; why he should continue to counteract the spread of diseases he has painfully and at great educational expense learned how to diagnose and treat; why he should so strenuously oppose year after year the efforts of antivivisectionists and anti-vaccinationists, with their Christian Science allies, to cripple research and to annul statutes already on the books, knowing his calls would increase did they have their way; and why at the same time he should continue to work longer hours for less pay during a shorter life of activity than most people, is an enigma to a hard-headed business man.

To be sure, business is now recognized as one of the professions in certain educational circles, but whether this will elevate the ethics of business, which is fundamentally competitive rather than fraternal, or whether it will un-

dermine the code of medicine, remains to be seen. With business goes advertising, and there are few forms of it more profitable than the manufacture and sale of proprietary medicines over the same counter with candy, cosmetics, and cigarettes. Even science has unblushingly begun to spread her experimental discoveries in the raw before the public by fostering a lay journal for the purpose. And since everyone is doing it, how long will the doctors continue as a class to resist? When they no longer do, and adopt the advertising methods of those parasites of the profession, the quack and the patent-mediciner, God help the man of modest means and everyone else, whether below him or above him in the social scale, who may some day need a doctor.

He, the man of modest means, is at the mercy of an organized racket beside which "bootlegging" is as child's play, for that was a nocturnal game and this is played in the open. Lost somewhere in the Department of Agriculture is a Food and Drug Bureau which does its feeble best to control what is printed on the package advertisements. But only the Federal Trade Commission, which probably is composed of lawyers, could, if they saw fit, put a stop to the falsehoods the press continues to carry regarding the contents of the package. And when such a thing as an influenza epidemic comes along and every newspaper in the country is spread with advertisements of cheap proprietary sure-cures, what are the people to believe? If any embarrassing questions are asked, you may be certain that your Congressman has already been instructed by a well-organized lobby not to interfere with what is a profitable business.

The explanation of the doctor's seeming want of business acumen lies partly in the restraining influence of his

time-honored precepts of conduct, partly in his preference to hold the respect of his own kind rather than of the financial world, and partly because inherently he's that kind of person, else he wouldn't have gone into medicine in the first place. He's already done a great deal not only for the poor but for the man of modest means as well, and it is offensive to be told by a board of lay people that he's neglecting them.

I have been led to look up the records of my one hundred and fourteen medical classmates who after a three-year course were turned loose on the community now almost forty years ago. Some sixty per cent of them went promptly into general practice, and too many have broken down or died ahead of their patients. And though the survivors are modest fellows who don't like to talk even to a schoolmate about their measure of success, far less of any grudges they have against the world, what they do say runs something like this: "I'm in general practice in the small town where I was born, and proud of it. I've been sufficiently successful to raise and educate a family. I've served my country as a first lieutenant in time of war, and for a longer time my district as health commissioner in times of peace. I still retain my self-respect — with the exception of giving out liquor prescriptions. *Distinctions*: none, not even having a baby named after me, which is unusual for a country doctor. *Hobby*: my family, my patients, and a keen interest in world events."

Now to what I would chiefly call attention is that, of these graduates of forty years ago who have lived in town or country the lives of general practitioners, a large percentage have served their communities in some public capacity, more often as health officer or as member of the local health board. But a basic medical education is no



longer considered either desirable or necessary for the holders of such positions. The health officer must be a specialist among other specialists with which medicine is already overloaded.

Stirred by what may be accomplished in checking the spread of certain bacterial and protozoal diseases by a medically trained Gorgas or a Leonard Wood, in the hope of perpetuating their species, a vast sum of money is set aside to educate separately and by a short cut those who are to take their places, all too often political appointees, which means for all of us a little higher tax. But when it comes to the ever-recurring fight against adverse legislation relating to tuberculous cattle, to compulsory vaccination, and much else, it's again the doctor, personally known in the legislator's home and with no conceivable axe to grind, who must usually come to the defense of the paid local official lest ground be lost.

I don't for a moment mean to imply that we should go back, for there's no going back. I merely wish in fairness to recall what the practitioner in the past has done to safeguard public health and to point out that the chief burden of expense, when government enters in, always falls most heavily on the same man of modest means. And, could he be heard, he would probably say: "Go slow with this proposal to insure me against those innumerable ills beyond control of the health officer. It will mean an elaborate organization of persons to make the system work; some form of racket will certainly grow out of it, comparable to the veteran racket; and even should the state take it over, it comes out of my pocket just the same."

And if the average man feels uneasy over the obligation to carry some additional insurance, the doctor feels even more so from his experience, at close hand, with the

system of employer's liability insurance compulsory in certain states, which is a veritable hothouse of malingering. At variable periods after a trifling injury a man reports at an ambulatory clinic or consults a doctor, sometimes a succession of doctors. Apart from his complaints, nothing is found wrong with him; but the case history is conscientiously taken and the results of the examination are recorded. Ere long the doctor finds himself summoned either by the man's lawyer or by the lawyers of an insurance company, or both, to appear on a certain date with all notes of the case. It turns out that the man is suing his former employer for \$10,000 damages, knowing that behind him stands an insurance company that will probably settle the case rather than have it come to trial. The man almost certainly is a malingerer, but it's always possible to find someone willing for a certain sum to testify to a one hundred per cent disability because of that bump on the head from an electric fan two years ago.

Another form of legal racket which thrives on the insurance system at the expense of the profession is the rapidly spreading prevalence of malpractice suits, particularly against surgeons, for imaginary grievances sustained, more often than not, as the outcome of some operation done purely for charity. When one asks reputable lawyers about this, they merely shrug their shoulders; and against the evil the doctor is obliged heavily to insure himself, and even then may not escape. Need we wonder at the mounting costs of medical care for honest people?

The impractical doctor at this juncture, after reading the reports of the Commission, ventures, half aloud, to suggest that the most effective and least burdensome form of voluntary health insurance would be for everyone to cut in half his (or her) annual expenditure for tobacco,

which would not only leave more than enough in the family budget to pay all the costs of medical care in the family but would eliminate a multitude of incapacitating nervous disorders in the bargain. To this the economist scornfully replies that such a mad scheme would be ruinous to the tobacco planter, would undermine the huge superstructure of industry that he carries, would put an end to the alluring illustrations of smoking females which beautify the magazines and the countryside, and, though there is not a cough in a carload, one mustn't forget that the U. S. Treasury gets three cents on every package sold.

Alongside this agitation regarding the expense of doctoring has gone a careful study of the prevailing trend of medical education. And as many of us here have been, or are still, actively engaged in teaching, we have all probably asked ourselves — even ventured to ask in faculty meetings — just what are we trying to make of our medical students? Departments multiply, and every teacher, if he's what he should be, believes his own field to be of major importance; and there lurks in his breast the hope that some few of the leaders in each class before him may be lured into his special subject.

From the first day, therefore, the prevailing system points toward that very thing which we now decry — overspecialization. And since science is now everywhere in the saddle, and chief emphasis is laid upon it, the premedical sciences have first say and we tend more and more to carry great institutions of research as appendages to our schools, now manned in increasing numbers by teachers who have had no medical training, far less actual experience with the handling of patients.

I don't mean to say that this is all wrong and that there should be a *bouleversement*; I merely wish to point out



that it makes the training of the doctor a long and highly expensive process and has had not a little to do with the expense of medical treatment. In actual fact, our schools no longer pretend that the degree of M.D. which students attain after four years prepares them for practice; we merely bring them to the point at which they must on their initiative scramble for a hospital appointment where they hope to acquire what the school has neglected to give them — the training necessary to secure a licence to practise.

With the degree, the school's responsibility — even interest — appears to end; and no school that I know of makes a consecutive and comparative study of its educational product. The surgeon in these later days who does not conscientiously follow up his cases to know what may be the ultimate outcome of the operations he performs is looked upon as an undependable routinist, and one would suppose that every medical school would wish to know what was the end result of its teaching. In my own school, at least, there is no such record beyond what is kept for social purposes by class secretaries, so it is impossible to learn, apart from the meager information supplied by the national directory of physicians, how many men today compared with forty years ago are attracted into the sciences, immediately take up a specialty, turn to some salaried position in public health or one of the services, or largely go, as of old, into general practice.<sup>1</sup>

<sup>1</sup> It is quite possible that the tendency toward specialization has been considerably overdrawn. Just because a practitioner limits himself largely to internal medicine, to surgery, or to obstetrics does not justify classifying him as a specialist. Every general practitioner comes to be known in his community and recognized by his fellows as possessing unusual skill, due to experience and good luck, in a certain type of case. Hence, he is apt to be called in consultation for, let us say, the pneumonias, the

There has been much lamentation about the disappearance of the family doctor, but, as already shown, he's not often heard from and I am far from believing that he's a vanishing species, in spite of our scholastic neglect of him in a system which, by over-emphasis on research and prevention, rather than on diagnosis and treatment, gives him while an undergraduate a sense of inferiority which he hopes to overcome by going quickly into a small special field of surgery or medicine, however ill prepared.

And should the report of the Lowell Committee lead our class-A medical schools to realize that for the practical requirements of the family doctor there is too much early teaching without a hint at its application, and should it lead to such a modification of the course that the prospective patient and his malady are in the student's mind and before his eyes at least for an hour or two of every day for four years instead of a scant two, society would greatly benefit, and there would be less reason to complain of the high costs of doctoring. There is every reason to believe that out of this system there would emerge just as many capable investigators who choose to devote their lives to research, just as many who feel the urge to strive for an academic career in clinical medicine, and just as many future leaders in the public-health service as we now produce by the curricular program of isolated compartments now in fashion.

The physiologist complains, probably with some justice, that the principles he has laboriously taught are not sufficiently dwelt upon at ward rounds; the pharmacologist,

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fractures, or the eclampsias of his community. Because of this altogether natural process of selection even the practitioner, unless he happens to be covering his district single-handed, comes inevitably to particularize in his work with the passage of time.

that therapeutics is neglected; the bacteriologist, that not enough stress is laid on allergy, to which a new journal is entirely devoted; and now pressure is being brought to bear to have all bedside teaching permeated with emphasis laid on *prevention*, as though this were something novel to the clinician.

A rose by any other name is just as sweet, and there has been in common English usage for the past four hundred years what the doctor has known as prophylactic (to keep guard before), meaning precautionary, medicine. And it would be a slur on the students' intelligence for a surgeon, let us say, to point out, as he has been urged to do, that he wears rubber gloves to "prevent" infecting the patient, gives the anæsthetic to "prevent" pain, removes the appendix to "prevent" peritonitis, and so on, *ad infinitum*. For his own part, he sits down and has a cup of tea to "prevent" fatigue, and then to "prevent" irritation keeps away from the faculty meeting where the great importance of preventive medicine will again be pointed out to him. Like many another catchword, — "reconstruction," for example, which was on everyone's lips after the War, — "prevention" can be very much overworked. There is only one ultimate and effectual preventive for the maladies to which flesh is heir, and that is death.

So the bewildered and harassed clinical teacher, be he physician or surgeon, can only say in rejoinder that it is futile to talk about preventing something one does not yet know how to recognize; that the short time at his disposal hardly suffices to teach the student how first to detect some few of the more common diseases and their complications; that in coming to a diagnosis the history and the physical examination of the patient are the important things, and the findings of the laboratory purely sub-



sidiary; that with more than half of the persons who have some ailment to complain of it's impossible to tell quite what is wrong, so that recourse must be had to encouragement and symptomatic treatment; that the knowledge of how to deal with the sick comes only with long experience; that the man and his mental reactions to his troubles must be treated as well as the disorder itself even when its nature is clearly recognized; in short, that the bearing of all that the student has learned in his preclinical courses, apart from a training in precision and accuracy, which he might have gotten as well in the clinic, has unfortunately nothing much to do with the vast majority of problems with which he will be confronted when he gets into practice.

Whether we have temporarily overstressed science and research in medical education and let it come to enslave us is not for anyone to say. If it has, the day will arrive when of itself the pendulum will swing and there will be a corrective reaction, for there usually is to whatever we overdo. In France, as all know, the traditional method of instruction has been all too much the other way about, for there it has long been the custom promptly to souse the matriculant in the sea of disease, from which he must flounder his way out. This he has managed somehow to do. But now the pendulum swings and there has been, as here, a much discussed movement to reorganize medical teaching to meet the demands of the changing times. Not only is it proposed to add an extra obligatory year to the medical course, making six to qualify for general practice, but two years more than that will be required of those who would take up a specialty, and when it comes to those who aspire to be operating surgeons — so dangerous to *sés concitoyens* — an additional four years.

Even this is not all. The matter has reached and been ardently discussed in the Chamber of Deputies, where the desirability of more scholarship and less science for the practising doctor has been warmly advocated. A "back to the humanities" movement has arisen which would oblige the prospective medical student before his matriculation to be qualified not only in preliminary physics, chemistry, and the natural sciences, but, since all good things are of Hellenic origin, in Greek and Latin as well!

There meanwhile has been much pointing to Sir Thomas Browne and to Rabelais and to the Linacres of the profession, as though many of us could hope to be humanists of their sort, any more than be productive investigators in the fields of present-day medical science. And while it is a subject on which a surgeon, in view of his illiterate ancestry and addiction for the vernacular, is scarcely entitled to speak, he can at least be permitted to admire and envy scholarship in his medical colleagues — even as did Paré.

Professor S. E. Morison, the historian, has called my attention to the fact that at Harvard, and probably at other universities as well, medical *Questiones* in past years were publicly debated in Latin at Commencement. In 1660: *An Motus sanguinis sit Circularis?* (Is there a circulation of blood?) In 1678: *An hepar sanguificet?* (Does the liver make blood?) In 1687: *An Curatio per pulverem sympatheticum sit licita?* (Can a cure be effected by sympathetic powder?) In 1690: *An Morbi sint Contagiosi?* (Are diseases contagious?) And so on, showing that seventeenth-century laymen were interested in matters concerning which contemporary doctors, trained by the apprentice system, — and not a bad system at that, — were inclined to disagree.

And even at the present time I believe that the translation of a page both of Greek and of Latin is still required of everyone who would become Fellow of the Royal College of Physicians and thereby qualify as a consultant — for how else could he use the pharmacopœia and write prescriptions, much less read the *De Motu Cordis* in the original! I was once told by Sir Henry Head that in 1900, when both he and Robert Bridges had gone up for their fellowship examination together, they chanced to meet on leaving the hall and he asked Bridges how he had made out with his translations. Bridges replied that the stupid examiners hadn't stated what language they wanted the pages turned into, so he had translated the Latin page into Greek and the Greek into Latin.

There always has been and always will be a certain proportion of scholars and humanists in medicine, — men like William Sydney Thayer, who has so recently left us, — just as there will be a smattering of scientists and artists and musicians, even novelists, poets, and an occasional statesman like Clemenceau; and it will be a sad day when we all come to be cut from precisely the same piece of educational cloth. Some may happen to take their scholarship, as others pursue their hobbies, seriously, even professionally, but the curriculum has less to do with it than most of us pretend to believe.

Where now do we stand with the case before us? Sir James Paget once remarked that, so far as he could learn, he was the only person who had ever recovered from double pneumonia after nine different consultants had been called in on the case. Dame Medicine finds herself just now in a similar plight. Considering her age, she has been unusually active these past few decades and, much to



her embarrassment, finds herself as "news" and altogether too much in the limelight. Being a retiring person who prefers simplicity, she has begun to show the strain of justifying the luxurious Babylonian hospitals and laboratories people of inflationary tendencies have insisted on building for her to use and give her whole time to.

Meanwhile, she has been somewhat worried by the fact that altogether too many of her offspring under the influence of the saxophone and the speak-easy have gone distinctly modern, become citified, ticker-minded, and gotten out of hand. While she has tried to console herself with the thought that this was only a temporary post-bellum phase, which seemed to affect other people's children the same way, her personal responsibility in the matter was put in the hands of a commission of nineteen eminent persons for investigation. After giving them what help she could and hoping an explanation for the existing instability of the world would be found, she set about her daily tasks with customary energy and apparent good spirits.

But the real trouble began after someone persuaded her five years ago, when she was feeling sturdy enough, to submit to a physical examination — in fact, considering her recently recognized social importance, her countless dependents and retainers, not to speak of her immediate family, she should have done so of her own accord every six months at least. Why, with all her hard work these past years she probably has hypertension or something worse, which should have been taken in time!

In view of her long neglect, it must now be done thoroughly and scientifically — family, marital, and past history, social environment and habits, dreams and complexes, just to start off with. High blood pressure indeed!

Why, one couldn't prick or prod her anywhere without finding a sore spot. Whatever the cost, she must take a room in the medical center for a more detailed study.

With misgivings, to this opinion she reluctantly submits. A board of fifty consultants, composed of experts and specialists of every sort, is called in. They in turn appoint others to assemble the data necessary for a diagnosis. Surveys are made, statistics are gathered, and graphs are plotted. Twice a year, to discuss and correlate the findings, the chief consultants meet, meanwhile issuing reports of progress; and, since they are scientific rather than practical doctors, the patient is not only allowed but encouraged to read these protocols, and she begins to feel very shaky about herself.

It becomes perfectly evident that the family, after a fair start, has somewhere acquired a bad gene — possibly from that fellow Paracelsus. And the poor old thing has had altogether too many offspring, most of them turned loose with no sort of control. These past few months, she's not only been losing weight but been showing signs of irritability, and certainly should be psychoanalyzed. This so far she has flatly refused, saying it's nasty; so we must keep her in bed a while longer, perhaps a wheel chair for an hour in the afternoons, while further studies of these alarming symptoms are made.

One of her doctor sons, who for propriety's sake has been permitted to sit in with the consulting board as an observer, occasionally slips into the sickroom, pats her on the back, and says: "Never mind, Mother, buck up, it will soon be over; there's not much more they can find to do, and I'm sure it's not so bad as they think. Even if it is, you've had a good fling these past forty years and the boys

have asked me to say how sorry we all are not to have been a greater credit to you. But you simply *must* stop reading your clinical history and watching your temperature chart or you'll get neurasthenic. What you chiefly need is a good night's sleep."

Finally the data are all prepared; and, as usual, there is want of agreement on the diagnosis and much less, consequently, on what's to be done. The gloomy majority feel that it's a deep-seated disease and probably incurable. Birth control and a better distribution of her activities on thinly populated places might be worth trying; but, before it's too late, she certainly should get insured. The more cheerful minority, who know her better, think it's just a case of nerves brought on by the times, by overwork and needless worry about some of her unruly children. One or two others, disagreeing with both of these opinions, insist that nothing venture, nothing have — it's better to be bold and operate at once, as it's the only possible way to make certain there's nothing in the pelvis; and if there isn't, there likely enough won't be.

As a compromise, someone is told off to break it to the poor old thing, considerably shattered by this time and a shadow of her former confident self, that though there is something indeterminate which is radically wrong, she may temporarily leave the clinic, on payment of the bill — now amounting to several millions — which she will find at the main office. However, if she doesn't change her general habits and manner of life, which make her a menace to society, and adjust herself to what is now an industrial world dominated by business and insurance, she'll be obliged to return for an exploratory operation, and that will cost a pretty penny.

Whereupon, with thanks for their efforts on her behalf,



she ventures to suggest that everyone seems to be suffering just now from a sense of insecurity and indecision, and it might be as well to wait until we pull ourselves out of this slough of depression and see just where we persons of modest means all stand before deciding on anything radical. She calls to mind what Galsworthy once said: the *status quo* is of all things most likely to depart; the millennium, of all things, least likely to arrive. There might chance to be a war or another influenza epidemic when we should need all the doctors we have and more, and all the empty hospital beds would quickly refill.

There are two sides to every question, and inability to see both constitutes the fundamental weakness of all theories, and particularly those relating to the biological and social sciences. This failure even invades what is supposed to be the most exact of all sciences, astrophysics, which supposedly deals with great abstracts. But one can approach an abstract from either side, and, depending on different views of cosmogeny, the universe is either expanding at a terrifying rate or contracting no less rapidly. If both views are correct, it must therefore pulsate like a macrocosmic heart.

But, however this may be, those who deal with the science of society deal with something that actually *does* pulsate with so short a time cycle that conditions almost from year to year are never quite the same, so that our theories of today are likely to need modifying tomorrow. What this puzzled world needs perhaps is more study of the past, fewer commissions and surveys of the present, and a greater number of philosophically-minded, self-supporting, and law-abiding persons who can see all round their particular problem and independently devote them-

selves to it as do most doctors and as did the little knife-maker in Langres.

And should the doctor, in moments of discouragement about the shortcomings of his own tribe, now so thoroughly ventilated as to make those he is most anxious to help have misgivings about him, need like other people a timely word of comfort, he can remember that, whatever the doctor of the future may come to be, it has been said not long ago of the doctor of his particular time — and with some small measure of truth by one<sup>1</sup> who had good reason to know him well — that

He is the flower (such as it is) of our civilization; and when that stage of man is done with, and only remembered to be marveled at in history, he will be thought to have shared as little as any in the defects of the period, and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practise an art, never to those who drive a trade; discretion, tested by a hundred secrets; tact, tried in a thousand embarrassments; and what are more important, Heraclean cheerfulness and courage. So it is that he brings air and cheer into the sickroom, and often enough, though not so often as he wishes, brings healing.

<sup>1</sup> Robert Louis Stevenson.

## IV

### THE HUMANIZING OF SCIENCE

IN the prefatory chapter of Dr. George Sarton's monumental undertaking,<sup>1</sup> there occurs the following statement: "The History of Science, being a new discipline, is not yet well organized or well circumscribed and attracts the attention not only of experienced scholars but of amateurs, dilettanti, and cranks."

From which of these categories I have been elevated to this position of prominence I hesitate to inquire. It certainly was not from the ranks of experienced scholarship, nor have I any pretense even as an amateur historian. Though long active in what is said to be a scholarly profession, yet I would be put to it to tell just where the technique of medical practice — the Art of Medicine — leaves off and the Science of Medicine begins.

Both are essentially "humanistic" in its wider sense, in so far as the one is directed toward the alleviation of the diseases to which mankind is heir and the other toward their ultimate banishment. The chief difference between modern science and the natural philosophy of the ancients is said to lie in our greater inclination to put things to the test of experiment; and, while Medicine is constantly

<sup>1</sup> *Introduction to the History of Science*, Carnegie Institution, Washington, 1927, Vol. I.

*Presidential address before the History of Science Society, Washington, December 28, 1934. Reprinted from "Science," February 8, 1935.*



broadening its scientific background, in a certain sense every drug a doctor administers and every operation a surgeon performs is experimental in that the result can never be mathematically calculated, the doctor's judgment and the patient's response to his prescriptions being variables indeterminable by any law of averages. But this is far from making Medicine a scientific calling.

That admission being made regarding the only subject with which I can claim familiarity, I must at once confess that I do not clearly perceive just where the humanities leave off and science in general begins, nor why in the schools any conflict should have arisen between them, for they spring from the same Hellenic roots and seem so essentially supplementary.

Naturally on the part of teachers there is constant elbowing for the curricular recognition of their subjects, and with energetic leadership emphasis from time to time may shift in one direction or the other. Thus at Oxford the humanities have so long received the greater attention that one easily forgets the presence there in the thirteenth century of Michael Scotus, of Sacrobosco, of Robert Grosseteste, of John Peckham, and above all of Roger Bacon with his dictum, *Sine experientia nihil sufficienter scisi potest*. Then again in the seventeenth century, under Wilkins, Boyle, and Wren, Lower, Willis, and Hooke, natural science was so ardently cultivated at Oxford that the Royal Society had its inception there. In Cambridge, on the other hand, the physical sciences since the time of Newton have been increasingly emphasized; and this same tendency now so far pervades most universities in our own country that the number of undergraduates who major in the classics appears to be constantly dwindling.

Yet those who ultimately take up whatsoever branch of science without some preliminary schooling in Latin and Greek unquestionably suffer a handicap. This is true, among many other reasons, in that our scientific terminology is almost wholly based upon these two languages; and consequently the special lingo that must be acquired, if not meaningless to the tyro without them, at least loses much of its real significance, flavor, and interest. What is more, since the early scientific treatises were written in the same languages that constitute the *Litteræ Humaniores*, there would appear to be no essential reason, apart from the subjects with which they happen to deal, why from a classical standpoint they are not as humanistic as what used to be called "polite letters."

All this goes to show that I do not know precisely what, if anything, the humanities have to do with humanism, or just what humanism is unless it concerns itself with the philosophy of man, whereas the physical sciences deal with the philosophy of his environmental matter — what Professor Dewey would call Naturalism.<sup>1</sup> But the old-time natural philosophy went out — proudly, be it said — with the comprehensive "Kosmos" of the aged Humboldt, whose death, curiously enough, coincided with the appearance of *The Origin of Species*, which may be looked upon as the beginning of the modern era of science, with its wholly altered conception of man's place in the universal scheme of things.

The term "scientific" in these modern days has come to be much abused. Many things that are popularly looked upon as being scientific, and many persons who are said to look upon life from a scientific point of view, are no

<sup>1</sup> John Dewey, "Humanism and Naturalism," Monroe's *Cyclopedia of Education*.

more scientific than an infant in its cradle, however much the child is in process of being brought up on so-called scientific principles with a pediatricist on one side scientifically to measure its vitamins and calories day by day and a psychologist on the other scientifically to protect it from complexes — perhaps even to provide an infant chimpanzee as a comparative playmate. Thus does the quasi-Science of Medicine sometimes lead to absurdities from which medical practice, largely controlled by common sense, usually escapes.

It is ridiculous that a doctor should be regarded as “scientific” merely because, having recourse to a few instruments of some considerable precision, he supplements his sensory impressions thereby, possibly puts a few of his observations or conjectures to the test of experiment, and finally writes a paper or two on his deductions. He may even awake some day to find his name starred in *American Men of Science*, when in his heart he knows that his supposedly scientific observations have been either disproved or reinterpreted almost before their appearance in print, whereas his true leanings are humanistic. At least he likes to think his instincts are humanistic — shall I say scholarly? — and yet, while so flattering himself, he is conscious of some uncertainty as to what, after all, the term really signifies. He is quite familiar with humanity — knows it, in fact, stripped to the skin — and his code of ethics emphasizes the Christian principle of philanthropy; but “humanism” appears to be something entirely different. It has become a word people conjure with.

Even after reading Irving Babbitt,<sup>1</sup> so bewildered have

<sup>1</sup> “Humanism: an Essay at Definition.” *Humanism and America: Essays on the Outlook of Modern Civilization*, edited by Norman Foerster, 1930.



I found myself regarding the implications of the term I have felt obliged to seek aid from a scholarly friend and colleague. His interpretation, it appears, is restricted to the last of the four definitions given in 1901 by Sir James Murray and his collaborators: namely, a devotion to those culture-promoting studies, especially the Roman and Greek classics which came in vogue at the Renaissance. Insisting that this is in accordance with the usages of Varro and Cicero, my friend cites Aulus Gellius to the effect that *humanitas* in Latin is *not* *φιλανθρωπία*, which is defined as *benevolentia erga omnes homines*, but that people who knew Latin and used it well “*humanitatem appellaverunt propemodum id quod Graeci παιδείαν vocant, nos eruditionem institutionemque in bonas artes dicimus. Quos qui sinceriter percipiunt ad petuntque, hi sunt vel maxime humanissimi.*”

Thus it would appear that even during the lifetime of Galen there may have been a tendency, against which Gellius protested, for the word *humanitas* to imply something more than literary culture, just as in our own time, on the authority of the New English Dictionary, humanism more properly signifies a “devotion to human interests” or “the character and quality of being human,” which comes very close to a concern for man’s well-being on the one hand and to *φιλανθρωπία* on the other.

I have gone into all this because of my somewhat enigmatic title, “The Humanizing of Science,” which may mean one of two things: (1) a revival of interest in the early classics that deal with natural philosophy, and (2) such an enlargement of the scientific outlook as to include in its scope matters which have to do with human welfare as something apart from culture and in the long run perhaps more important.

While a revival of appreciation for the literary and historical classics chiefly characterized the Italian-born humanistic movement of the Renaissance, it should not be forgotten that contemporary mathematicians and astronomers were for their special purposes finding the early classics of science no less remarkable and important as sources of learning. But the scientifically-minded among the scholars of the day represented, as always, a minority, and it was natural enough that the larger group, through the wider appreciation and understanding of the subjects with which they dealt, should have come to be regarded as the more cultured.

As typical representatives, the names of Erasmus and his English friends, More, Colet, Latimer, and Grocyn, quickly come to mind, and, among doctors, perhaps more particularly the name of Linacre, *philosophorum medicorumque facile princeps* — with the futile wish that one might have possessed some of his scholarly gifts.

While Linacre is said to have made his Latin translations of Galen from Greek codices in the Vatican, they were already well known through Muslim transmitters whose texts, though used in all the schools, were coming into disrepute as supposedly barbaric. Nevertheless, Albertus Magnus, according to Renan, owed everything to Avicenna as did Saint Thomas Aquinas almost everything to Averroës; so possibly even Linacre, in collating his Galenic texts, may have had reason to lament his want of familiarity with a language which was of little use to the Renaissance students of history and literature. The Islamic scholars thought more of Hippocrates than Homer and were far more interested in the mathematics and natural philosophy of the Greeks than in their literary writings.

Of the seven liberal arts required for a doctorate, those composing the *trivium* were probably more useful for a prospective doctor of medicine than were arithmetic, geometry, astronomy, and music — the four mathematical disciplines of the *quadrivium*. Medicine consequently, though slow in being regarded as one of the learned professions, attracted during the Renaissance many humanistic scholars scarcely less notable than Linacre. Physic was taught as a branch of philosophy; and the ancient learning, though presented in the tongue universal to scholars of the day, was largely what the industrious Hunain and others, copying from Greek codices, had passed along, in course of time to be laboriously set over from Arabic into none too good Latin.

The hand of Aristotle, with the commentaries of Averroës, lay heavy on philosophical thought for a period of four centuries; but the fact that the peripatetic teachers of the Lyceum were keen observers, and had dipped so deeply into mathematical, physical, and biological subjects that their era may well be looked upon as “the heroic age of science,”<sup>1</sup> has been all too much neglected by humanistic scholars of recent times.

The value of Greek and Latin as a cultural discipline began to be undermined so soon as the exercises — as many of us to our sorrow remember — began to be largely philological and pedantic in character. But over-emphasis on classical learning even during the Renaissance sometimes led to absurdities, as when in Toulouse and elsewhere there developed a Ciceronian cult against whose pompous style in writing and diction Erasmus winged one of his barbed shafts. It, however, was dangerous to be

<sup>1</sup> William A. Heidel, Carnegie Institution Publication No. 442, Washington, 1933.



too knowing and to express ideas that might be taken as adverse to the accepted dogmas of the Church even when couched in the Ciceronian style which Dolet cultivated.

And if this was true of the literary humanists, persecutions for heresy were far more likely to strike at those who dabbled with science and formed opinions about cosmogeny and natural phenomena that ran counter to the book of Genesis. Copernicus died before the Inquisition could call him to account for publishing the *De Revolutionibus*, while for upholding the views it expressed Giordano Bruno went gallantly to the stake and Galileo's abjuration alone saved him from a like fate.

The restriction of humanistic culture to those classics possessing literary and historical worth can be envied, since their message from generation to generation is not subject to change. The classics of science, on the other hand, while just as ancient, deal with concepts that continue to be in a constant state of flux. This is particularly true of the physical sciences, for despite their supposedly precise laws, expressible in complicated symbols, it takes a mathematical genius to keep up with the shifting approaches of astronomers and physicists toward a solution of the great riddles of space, time, and the atom. Meanwhile space gets ever larger and particles ever smaller.

Those of us who have clung to the belief that nature abhors a vacuum and that Archimedes knew what he was about in regard to  $\pi$  being 3.1416 are told that all such old-fashioned ideas which failed to take time and the quantum theory into consideration are completely outmoded. But who were Pythagoras and Euclid and Aristarchus and Archimedes and Apollonius and Hipparchus, to mention only a few of those who left their names stamped on mathematical science long before the heyday

of Rome? In my youth Euclid was the name of a street in Cleveland, Ohio; and then I had, of course, heard it rumored that Archimedes once got a new idea in his bath — which explained why plumbing was so often hopefully labeled Eureka.

Partly as a sop to my humanistic yearnings and partly in the vain hope of stimulating my unmathematical mind, I once purchased a copy of Ratdolt's famous edition of Euclid's *Elementa* in a monastic binding. Possessing that, I could not resist another scientific landmark, the *Principia* of Newton, when a copy happened to come within reach. Here, then, on my shelves, if not in my head, were scientific treatises as an evidence of my respect for a branch of knowledge whose theorems and mathematically expressed formulæ would supposedly endure for all time.

This anticipation, however, was soon shattered by Einstein, whose original paper on relativity I was impelled to secure; and though none of it could be understood, a mathematical colleague assured me that it unquestionably represented the last word. But no such thing! The chief justice of the High Court of Allahabad has just succeeded, it is said, in reducing the equations of both Einstein and Newton to such simple forms it can be demonstrated that time slows down with distance. In other words, it can now be mathematically shown that if *A* and *B* are twin brothers, and *B* makes a journey, *B* must be younger on his return than *A*. Doctors, of course, have long been aware of the practical truth of this, and it explains their custom, when put to it to tell what is wrong with a patient, to suggest travel and change of scene as favorable to longevity.

Thus, while modern physical science makes headlines for itself so fast there is difficulty even for experts to keep

up with it, Sir James Jeans publicly acknowledges that photons, electrons, and protons, though their properties can be expressed mathematically, are really as meaningless as  $x$ ,  $y$ , and  $z$  to a child on its first lesson in algebra; and it has been admitted by someone else that the advance of physical knowledge is at present reduced to the extraction of one incomprehensible from another incomprehensible. Yet we are assured that the mathematical starting point for all this was Hero's synthesis of the two laws of Euclid which have merely been expanded by Newton, Einstein, and Suleiman to embrace all the activities of the Universe.

Though beyond the comprehension of most Renaissance humanists, the impact of the ancient treatises dealing with mathematical subjects certainly had a no less marked effect on the progress of human thought than had the classics of history, philosophy, and literature; and it would seem therefore that some familiarity with their purport at least should be as much a part of the fiber of a classical education as the writings of Homer, Virgil, Horace, and Cicero.

Historians, generally speaking, either from want of understanding or from lack of interest have rarely laid stress on the manifold ways in which science and its applications have modified world events and affected human society. But, since these effects are becoming rapidly accumulative, their consideration by historians will be more and more inevitable as time passes. The last great war was precipitated apparently by political rivalries, but in its conduct it was clearly a war between the mobilized scientists of the contending parties, for they alone were in a position rapidly to increase the effectiveness of its destructive agencies and in an emergency to devise means



of defense against such novel forms of destruction as might be introduced by their opponents. It was a sorry business to throw in the lap of science, though, stimulated by the responsibility, science doubtless has profited by it in many ways.

But, as political historians know better than most others, the almost invariable aftermath of war is a temporary wave of apparent prosperity followed by a more or less prolonged period of economic depression, with its social disorders, prevalence of crime, licentiousness, and unemployment. On these now urgent and world-wide problems science does not as yet appear to have put its mind — or, if it has, it has not offered any solution to the problem. Society in the interval restlessly endures the situation as best it can, and it is left to time and politicians to find a way out.

Meanwhile, a very curious and unexpected thing has happened. Science to the average man has become suspect, and he has begun to feel that scientific research and the labor-saving inventions which grow out of it are chiefly responsible for the hard times and unemployment and uneven distribution of property. Legislative bodies have been inclined to ask what, after all, science is up to, and to question whether the motives that activate it are as altruistic as the scientists in their arrogance would have us believe; they set about to curtail the funds that hitherto have been allotted to governmental research and grow inquisitive regarding the scientific attitude toward such things as the secrets underlying the manufacture of munitions.

This is surely a phenomenon of extraordinary interest. Not since the days when they were under close surveillance of the Church have scientists been put in a de-

fensive position of this kind. But in this instance it is not the theologian but the man in the street and on the farm who is asking his neighbor, "What price science?" And since the physical scientists in particular take themselves seriously and are prone to regard the results of their activities as benefactions to mankind, they have been struck all of a heap, and a number of them have felt obliged to make a public apologia that has been none too convincing.

This surprising situation has been the more remarkable in view of the fact that scientific discoveries have never before been so widely heralded by an organized press agency, nor their applications so extensively advertised by exhibitions of scientific progress, like that recently held at Chicago, and by celebrations such as was staged three years ago on the centenary of the discovery of electromagnetic induction.

Yet could modest Michael Faraday have stepped out of the Royal Institution where in the Christmas holidays of 1860 he had given to a juvenile audience six lectures on the chemical history of a candle, and have seen his familiar London in the dead of night ablaze with indirect lighting, he would, I imagine, have been somewhat taken aback by the responsibility laid at his door for all that the spectacle implied.

A good many people have been left confused, in the present discussion of the matter, as to the distinction between scientist and inventor, between what is called pure science — the disinterested search for truth — and the practical applications of scientific discovery through engineering. This is the more so because the apologists for science, in bolstering up their defense, have chiefly instanced some of the more outstanding scientific inventions

and their relation to human comforts and conveniences. Even so, there may be reason to doubt whether the harvester, the internal combustion engine, the electric dynamo, the victrola, the cinema, the radio, the sawed-off machine gun, and so on, have in the long run been more beneficial or harmful. They enable us to do more in shorter time, to go faster between points, to banish darkness, and so on, but how much human society has been benefited by more wheat with less labor, by getting somewhere a little quicker, by the products of Hollywood, the electric light and night life, the radio and its misleading advertisements, the machine gun and banditry, is open to question.

And whether anyone thinks more clearly and deeply than before about the social problems that face humankind, and whether people as a whole are as contented and happy as they were in simpler times, may well be doubted. Invention, of course, is an inevitable part of science, in so far as the scientist continually has to improvise things to help with his researches, but the trouble comes when business takes both science and engineering into partnership and then through mass production, abetted by the psychology of modern supersalesmanship, makes the distribution of the economic benefits disturbingly lopsided.

Faraday's discovery was unquestionably the starting point of the electrical industry that has spread over the world and employs a vast number of people. At the same time, with the great expansion of electrical devices, the machine becomes man's chief competitor — the tractor-drawn harvester and gang plow displace hordes of farm hands; road-making and track-laying and concrete-mixing and electric-welding machines displace hordes of city laborers; the electric furnace and out goes the chore man, the frigidaire and away with the iceman; the dialing tele-



phone dismisses an army of operators from the switch-board. Countless other illustrations might be given to show how the applications of a scientific discovery may well throw people out of jobs faster than the manufacture of its patented gadgets gives others employment.

A short time ago a distinguished British engineer in extolling what Einstein has called "the limitless perspective and beauty of modern science" referred to the newly completed Battersea Power Station as representing the highest stage of development of the science of engineering; for there three steam turbines with a total output of 300,000 horsepower — a power exceeding that of four and a half million laborers! — could be seen in the engine room all under the control of one man wearing a spotless white coat. While this may appear beautiful to the engineer, there is at the same time something inhuman and terrifying about it.

It is quite true that many patented inventions are purchased and closeted to protect industries that are temporarily stabilized. It is true also that one cannot easily foresee what will be the ultimate effect on society of a given invention — like the invention of printing, for example, which in making a new trade threw a vast number of scribes and rubricators out of work. There was no possibility of heading off the reduplication of books even had it been desirable, any more than could the electric light, the telephone, the automobile, the cinema, the radio, the aeroplane, and countless other inventions based on scientific experiment and discovery, have been pushed aside.

None of them could we now do without. They indubitably have added vastly to the interest and zest of life and at the same time have played a large part in what we have mistakenly idolized as prosperity. It has been esti-

mated, for example, in pointing out the beneficent rôle of applied science, that the commercial value of the inventions of one man alone — the late Thomas Edison — have amounted to fifteen thousand million dollars. And just here it seems to me that in some concealed way lies the crux of the matter. For, compared with this vast sum, had Jenner's or Lister's or Pasteur's or Laveran's discoveries been patented and commercialized instead of being outright gifts to humankind, the economic value of any one of them would have been simply incalculable.

Theology, long the controlling factor in our educational system, finally was supplanted, and the chief emphasis came to be laid on linguistic and literary culture. This state of things endured until the past century, when the great advancement in the natural sciences and engineering enabled their representatives successfully to challenge the supremacy of the classics, thereby securing ultimate parity in the curriculum. At the present time we may be approaching another such change, since in some institutions business has come to be accorded the dignity of a university subject. This would not be particularly disturbing were it not for the close association of business with engineering and other applied sciences through the commercialization of their inventions, this contact, with its implication of advertising and salesmanship, being as remote from the old humanism and its standards of culture as anything well could be.

The view has been expressed by Dr. Sarton that "science must become more humanistic and humanism must include science." But this is far from humanism's ever coming to include business or from expecting business ever to become humanistic, with its ancient maxim that "what's good for business must therefore be good for everybody," which

is a little like saying that charity begins at home — and usually ends there. Dr. Sarton, I take it, was using the words in their more truly Ciceronian sense, as David Eugene Smith presumably does in saying<sup>1</sup> that by studying the mathematics of the Greeks in the original texts Regiomontanus was “the first who made humanism the handmaid of science.”

So it may be horrifying to scholars to have what appears to be a modern connotation given to this historic word. Regiomontanus, however, was called from Nürnberg to Rome by Pope Sixtus IV to put his mathematical mind on the reform of the calendar, and subsequently at his own expense printed the first almanac, a copy of which Columbus supposedly used on his voyages. This to my conception was no less humanistic on his part than taking up the study of Greek the better to understand the principles laid down by the early writers on mathematical and astronomical subjects.

It would be Utopian to expect of commercialized science that it should forgo the financial returns from its discoveries and inventions on the grounds that, if its activities are so definitely gifts to mankind, mankind should have a larger share in the profits. Yet this has been part and parcel of the ethical code of the doctor and of medical scientists from time immemorial — only to be broken occasionally of late years, I grieve to admit, under the provocation of economic necessity.

Time was when the doctor would have lost caste if he commercialized a secret remedy, the method of preparing a useful drug, a piece of apparatus, or a surgical instrument. Now that the barrier has been broken and a university here and there has come to engage in the mar-

<sup>1</sup> *History of Mathematics*, Vol. I, p. 260, 1923.



keting of such products, there is danger that the tendency may spread and that the profession's long-accepted standards of humanism may come to be lowered. In the past, vast fortunes have been made for quacks and charlatans by the sale through advertising of worthless patent medicines, and the temptation must be great in these hard times for those who have discovered, let us say, some potent tissue extract that proves to be of a high medicinal value. Should it become a universal custom, however, and Medicine thereby become commercialized, she may well hang her head for her lost altruism, particularly should Science come to take a leaf from her book and decide that the greater part of the royalties on her patent rights justly belongs to the people. This has been done in a few instances, but the practice is not likely to become universal, for human nature is the last thing to change and this is still a practical — that is, selfish — world and not the New Atlantis.

It is, of course, extremely doubtful whether Science is in any way to blame for the economic troubles in which the world has been wallowing. One might with equal reason lay unemployment and the increasing need of insurance against old age at the door of Medicine for keeping more people alive than can be employed. Nevertheless the fact that the question of responsibility has at this time been raised will certainly some day be looked back upon as a matter of great historical interest.

People in general are unquestionably becoming more socially-minded — that is, more “humanistic” in its broader sense — and this is everywhere reflected in the governments that undertake, however feebly, to represent them. In a brilliant and courageous address<sup>1</sup> just a year ago be-

<sup>1</sup> Henry A. Wallace, *Science*, January 5, 1934.

fore the American Association for the Advancement of Science, that modern Cato, the present Secretary of Agriculture, challenged the assembled scientists and engineers to tell where they were heading; and, lest Spengler prove to be right in his pessimistic prophecies, he appealed to them to bend their talents to higher human aims than the mere increase of productive power.

In similar vein the Bishop of Carlisle opened the recent meeting of the British Association at Aberdeen with a sermon in which he asked whether the time had not come for science to abandon something of its severe spirit of isolation. The entire program of the meeting, indeed, was given over to a consideration of the social consequences of scientific discoveries. It represented a plea for the closer affiliation of science in the task of government "in terms which admit of unfettered inquiry, of undiminished loyalty to the truth, and a vision characteristic of the great age of Greece." This at least is what reports of the meeting said of it, and if that is not an appeal for a more humanistic science one is at a loss what to call it.

Among those who call themselves pure scientists, whatever their particular field, there are many who feel that they would demean themselves and lose caste among their fellows should they engage in researches that obviously point toward some utilitarian purpose. This I have always regarded as an academic pose; for, in the disinterested pursuit of knowledge, to stumble, as did Röntgen or the Curies or Banting, on something not only of great scientific importance but at the same time immediately applicable to human welfare is certainly nothing to be ashamed of.

There have been plenty of socially-minded and benevolent — dare I say humanistic? — scientists in the past.

One quickly thinks of Benjamin Franklin, of Count Rumford and Humphry Davy, to give a few examples. Two of them were American-born, and to one of these the citizens of Munich erected a monument in gratitude for the reforms in public service and social economy that he had brought about while a resident in Bavaria. In their day was organized in England a Society for Improving the Condition and Adding to the Comforts of the Poor "by the systematic employment of scientific methods and knowledge."

Whether the present British Science Guild, whose professed purpose is "to promote the application of the scientific methods to social problems and public affairs," is an outgrowth or a continuance of the older society I am not prepared to say, but the fact that no such organization exists in America should give our scientists pause. Never was there greater need for such a movement, and people are beginning to ask why our social problems are not being attacked by those presumably best fitted to solve them because of their familiarity with scientific methods.

Something of the sort might well enough grow out of the Science Advisory Board recently appointed to give advice and make recommendations to the government regarding ways in which science might be of service to the public interest. And should the leaders among our scientists grow more sensitive to the mood of the times and be persuaded at this juncture to focus their highly trained and inventive minds intensively on these difficult subjects, a more humanistic attitude of science or humanization of scientific effort might result which might check the present trend toward a machine-made and machine-operated civilization whose social dislocations more than offset the



personal convenience of its many time-saving and labor-saving devices.

So let us hope that when some future student of this confused and disconcerting period in our history comes to tell of it he will be able to say: At the very time when such progress in their subjects was being made as never before, with one discovery following on the heels of another, the scientists and engineers of the country temporarily abandoned the investigations dear to their hearts in order to concentrate on problems the most difficult of all to solve — those that have to do with the social well-being of the community at large; thus, under a quickly spreading religion of humanity, there began a new era — one in which scientists took a commanding position in a rapidly changing world, and through their well-planned and well-executed experiments a new and rational science of society came into being and made its first great forward movement.

It has been said <sup>1</sup> that one distinct advantage we hold over our predecessors is that we have more history behind us; and that the value of classical studies is what they teach us, by example or warning, of the experiences of the civilizations from which we have sprung. So in all likelihood my imaginary historian, in recording the new humanistic spirit that was born of the great depression, will have occasion to add that those who played the most effective part in bringing it about, whether scientists or not, were persons who knew where were to be found the most noble examples of civic duty, who were familiar with the long history of another republic, and who remembered Cicero's maxim, *Salus populi suprema lex esto*.

<sup>1</sup> J. W. Mackail's *Classical Studies*, 1925, XII.

## V

### THE PIONEER MEDICAL SCHOOLS OF CENTRAL NEW YORK

IN the history of our country, few chapters deal with events more picturesque than the successive waves of migration of our people to the land of promise beyond the setting sun. Of these episodes, none was more remarkable than the great exodus of New Englanders who, a century and more ago in slow-moving covered wagons, trekked across this central part of New York to face hardship and uncertainty in the newly organized "Territory of the Northwest" that lay within the vast boundaries of the Ohio and Mississippi Rivers and the Great Lakes.

The narrow valley of the Mohawk, separating the Adirondack wilderness on the north from the Catskills, and the great central plateau of the state on the south provided the natural, indeed the only possible direct route of access to the new lands, where, it was said, once the forest of hard wood had been girdled and cleared, a furrow could be laid without turning up an annual crop of boulders. So across this domain of the once powerful Iroquois, and over trails originally made by them, there took place after the federation of the Colonies, first in a trickle and then in a wave, this spontaneous transfer of people among whom were the forbears of many of us.

*Address at the Centenary Celebration of the College of Medicine of Syracuse University, June 4, 1934. Privately printed, 1934.*

The more direct and most favored route lay well south of the river and got its name from Cherry Valley, that frontier hamlet of tragic memory through which the trail passed fifty-odd miles west of Albany. Pretentiously known later on as the Great Western Turnpike, this southerly route continued on through Onondaga, and thence, as the Seneca Turnpike skirting the fingertips of the lakes at Skaneateles, Auburn, Geneva, and Canandaigua, it passed through Batavia to Buffalo, a good three hundred miles and more away.

With an ox-drawn wagon filled with his household possessions, and another, horse-drawn, to accommodate his family, my great-grandfather of East Windsor, Connecticut, joined this procession in the early summer of 1811 to take up land in the Western Reserve. It was a long and tedious journey requiring several months, and a diary giving an account of it dwells upon the atrocious state of the trail over which ten miles a day was exceptionally good going. There was only one thing worse than the corduroyed sections of the Cherry Valley pike, which almost shook one's bones asunder, and that was the clinging, clayey loam of the Holland Purchase in what was then Niagara County, for it might hold a wagon fast for hours.

And when finally Buffalo was reached, a village of some hundred houses, December was upon them and they were told the trail through the Cattaraugus swamps at that time of year was impassable. Hence, they must either spend the winter where they were or sell their wagons and take their chances on a small schooner which was anchored off the rival village of Black Rock in the Niagara River, awaiting a favorable wind to get out of the current and proceed up the Lake. This latter alternative, the one ac-



cepted, proved more hazardous than even the Cattaraugus trail, for in a winter's storm by a miracle they barely escaped shipwreck — but this takes us out of the State of New York and becomes temporarily another story.

These emigrants of the early days from old Connecticut must have been sorely tempted to break their long journey and to settle somewhere in the beautiful and fertile country through which they were passing. Had it not been that they were answering a call of the blood, and were joining their own people in a New Connecticut where in many instances land had already been purchased, many would doubtless have done so, for what awaited them in the sparsely settled wilderness of the Reserve was unknown.

Another and more circuitous route — the old Genesee trail — wound its way along the northern banks of the Mohawk through Schenectady, Amsterdam, Little Falls, Herkimer, and Utica, at which point it forked, the southerly prong turning across the river to join with the Cherry Valley pike at Cazenovia, the northerly prong continuing on to end blindly at a place called Rome. This was not the Rome toward which all roads once led. Far from it. It was approachable from no other direction except precariously on foot, because of the pestilential and essentially impassable morass that surrounded it.

What the region was like in its primeval state may be gathered from a letter written by a certain Matthew Brown, Jr., evidently a doctor, in reply to an inquiry from David Hosack regarding the possible domestic rather than foreign origin of yellow fever — then a much mooted question. After stating that he had resided for a matter of ten or twelve years at the head of *bateau* navigation in the Mohawk River and Wood Creek, and

after describing the geological characteristics of the region which indicated that it had once been wholly submerged, he went on to say: —

It has been the opinion, that the region about the Oneida Lake is the most sickly of any part of the western country, except at the salt-springs in the county of Onondaga. . . . The disorders of the country are such as physicians would say are natural to it, viz., intermittents, dysenteries, diarrhœas, and some years, typhus fever, which often goes through a family and neighbourhood, when it once gets into it. . . . We also have a fever in this country, which has got the name of *Lake Fever*, which is said to be not unlike yellow fever. It never attacks us until late in the summer, and the first months of autumn. A frost sufficient to stiffen the mud, or freeze water so that it can be perceived, puts an end to any new cases.

So, at “the salt-springs in the county of Onondaga,” the conditions were even more unhealthy than this. Little wonder that no road beyond Rome was carried into this forbidding and fever-stricken region; and yet, had it not been for these swamps and the wells of salt that lay south of Oneida Lake, we might in all probability not have been meeting here today.

So indispensable has the commodity salt always been, the report of its discovery in this inland region, by a lone Jesuit missionary who in 1654 had unexpectedly come upon the place, caused great excitement among the French, and one of them who subsequently came here to corroborate the story was none other than Lord Frontenac himself, who wrote home to say that he wished the springs were nearer Quebec. But even had the Mohawks and their allies felt more friendly toward the French, Quebec was too remote for any such traffic in salt as the Onondagas, by pack along the trail or in canoes on the river, subsequently carried on with the Dutch and English settlers

who a century later were beginning to infiltrate the wilderness and take up grants in the lower Mohawk Valley.

Not long after the Revolutionary War a certain few venturesome souls, through the lure of salt, actually domiciled themselves in this forbidding region, the first of them having been a youthful war veteran and trapper, Ephraim Webster, who built a cabin at the mouth of Onondaga Creek. Identified for a time as Webster's Landing, the place became known ere long as Bogardus's Tavern, after the proprietor of a local inn in which uncouth and bearded salt-boilers were wont to congregate and curse the climate.

From earliest historical times the manufacture and distribution of salt has been made a governmental monopoly, and in this tradition the State of New York in 1795 purchased the reservation from the Onondagas, laid out a village appropriately called Salina, and began on its own account the distillation of salt as a source of revenue. And finally in 1804, in order to raise money for the construction of a proper road into the region, the Legislature sold for a trifle to one Abraham Walton some two hundred and fifty acres hereabouts. On this land the growing settlement, first called Milan and then South Salina, was better known as Cossitt's Corners (Cossitt's for short) after the new proprietor of the local tavern — Bogardus by this time having in all probability succumbed to a combination of ague, rum, and salt pork.

Time moves on. The great canal, said to have been first advocated in print by a certain Jesse Hawley in 1807, and in support of which the next year Joshua Forman had been sent by Onondaga County to the Assembly in Albany, was at last, after years of delay, not only staked out but in process of construction. The difficult central section from



Rome to Montezuma passing through the swamplands at Cossitt's was the first to be attacked, Governor Clinton with due ceremony at Rome, on July 4, 1817, having turned the first spadeful of dripping humus himself. Three long years were needed, with the aid of imported Irish labor, to complete and put to local use this central section of the great ditch. And, all expectant of the day when Erie water was to come through and bring with it prosperity, Cossitt's had just acquired a post office and been newly baptized with a classical name as good as that of Rome and Troy, even if longer.

Yet rapidly growing Syracuse, for all its new name, had still five years impatiently to wait for that momentous day when, on October 25, 1825, the western terminus of the canal at Little Buffalo Creek was finished and opened for through traffic. Properly enough, the principal celebration was staged at Buffalo, where De Witt Clinton, reëlected Governor on a "canal ticket," was on hand together with other officials and pundits from Albany. There were patriotic speeches, a great parade, a public dinner, and a grand ball. But the most significant moment was the ceremony attending the departure of the horse-drawn packet boat, *Seneca Chief*, on the first through trip to Albany. It carried a party of Buffalonians with a keg of Erie water in their charge — not in those days for quenching thirst, as other more effective beverages were doubtless provided for that. It was purely a matter of sentiment — for the fresh water was to be emptied in the Atlantic and replaced with salt water, which was to be brought back and poured in turn into Lake Erie, thus symbolizing the wedlock of the open ocean and the inland lake.

Among the inconspicuous but interested onlookers to

all that took place on that eventful day in Buffalo was the son of Ebenezer Williams, who fourteen years before, on his way to the Reserve, had found the place a hamlet of some three hundred and fifty souls. This young man was my grandfather, William Williams, then twenty-two years of age, who at the time was connected in a minor capacity with the ill-fated Bank of Niagara. He has left a vivid account of what went on, and how the cannon, used not so long before by Admiral Perry's flotilla in a famous battle, had been stationed at intervals every few miles along the Canal — a thirty-two-pounder at Buffalo — so that news of the *Seneca Chief's* departure could thus be relayed with the greatest possible speed to Albany, two hundred and eighty miles away as the crow flies. And the hour and forty minutes required for the purpose was looked upon as something marvelous and never before equaled in the way of transmitting a message by sound.

And now that I have dragged my grandfather on the distaff side thus into public view, I may as well at this juncture produce the other as a probable spectator on the same memorable day near the eastern end of the Canal — at Schenectady, to be precise, where he, with the young lady he was courting, may have heard or possibly — though I have no documents, as in the case of William Williams, to prove it — have actually *seen* the local twenty-pounder relay this famous message.

How it was that Erastus Cushing's father-in-law soon-to-be happened to be living with his family in Schenectady at this time I cannot explain. He certainly was not there for his health, and I suspect that, being the owner of a locally celebrated marble quarry in the Berkshires, he may have had ambitions to line the many locks between Schenectady and Albany with this excellent material, which

would have made the hand of his charming daughter certainly no less desirable to a youthful and impecunious M.D. At all events, at Schenectady she and the young doctor were married the next summer, after which he hung out his shingle in Troy for a year before the whole family returned again to their Berkshire home.

So you see, having been invited — somewhat late, to be sure — to make an address here at what was Cossitt's Corners near the center of Clinton's canal where digging first began, and fortified with the legend of a grandfather on a certain eventful day at each end of it, I feel that I have a certain inherited right to make a speech on the subject, which neither of them apparently was asked to do. What is more, they would probably both of them have been greatly annoyed with me for dragging their names into this discourse; but, having inadvertently begun with the one, I have found it convenient to bring in the other because of his profession, which more clearly concerns us on this centennial occasion.

When the more venturesome of the early settlers along the Eastern seaboard began to push out into the wilderness, there to reassemble at favorable points in small communities, they soon found themselves less urgently in need of preachers and lawyers than of schoolteachers and doctors. Fundamentally law-abiding and religious, they could take the punishment of lawlessness as well as the conduct of worship into their own hands. A schoolhouse was soon built; someone was found who could at least teach those rudiments, the three R's; and, however small the community, there were almost certainly some among them who had a lay smattering of knowledge regarding the preparation of home-made simples. But when more serious illnesses and accidents occurred, a messenger would



be sent in a panic to summon the nearest practitioner, be he fifty or more miles away.

These isolated doctors in the villages dotting the trails behind the frontier were accustomed to take apprentices into their homes, and as the demands for medical care increased it was inevitable that some few of the more progressive, energetic, and better trained should combine to start a school in which their own students, and others with a leaning toward medicine, might have their education carried forward by a brief and concentrated course of lectures. Indeed, it might be brought to the point of getting a medical diploma, should the local school in course of time have become affiliated with a near-by academy or college whose charter entitled it to award professional degrees.

Thus the successive waves of migration tended to leave medical schools in their wake. They were not evenly distributed, to be sure, either in space or in time, for the western surge that followed the discovery of gold put the Cooper Medical School on the Pacific Coast well ahead of its calculated period. Though some of these institutions had only a brief existence, not a few before their decline acquired a reputation which actually rivaled that of the older institutions at Philadelphia, Boston, and New York City.

Such pioneer schools at their best existed in this central valley of the State of New York a century and more ago. The first to be set in operation was the justly celebrated school at Fairfield, a small village in Herkimer County not far from Little Falls. While in Colonial days an occasional New Englander had wandered in, the scattered population of the district was largely composed of Palatinate Germans; but after the Revolution the number

of New Englanders rapidly increased, and among them there came in 1792, from Goshen in Litchfield County, Connecticut, a certain Dr. Westel Willoughby, Jr., then twenty-three years of age. He first settled in Norway and later on built a house for himself in the valley of West Canada Creek, where he resided the remainder of his life in the practice of his profession.

In spite of his youth, Dr. Willoughby must soon have gained the respect of the community, for in 1803, when Fairfield Academy was incorporated, his name appears among the first board of trustees; in 1806 he organized the Herkimer County Medical Society; in 1807 he not only helped to found the Medical Society of the State of New York, but was chosen to be the first moderator of the village of Newport and was elected to represent the County of Herkimer in the State Assembly. This probably accounts for the small appropriation for the medical school which had been organized in 1809 by the trustees of Fairfield Academy.

An act to enable that mysterious body "the Regents of the University of the State of New York" to establish a College of Physicians and Surgeons within the state had been passed by the Assembly on March 24, 1791. However, it was not until March 12, 1807, that the charter for the college in the City of New York was first granted, and only five years later a wholly similar charter was issued incorporating the Fairfield school as the College of Physicians and Surgeons of the Western District of New York, at the same time doubling its small subsidy. Willoughby doubtless had something to do with this, for his name appears first among the twenty-four trustees the charter mentions. Much more might appropriately be said of him here, for his influence on his colleagues and

pupils spread, among other places, to Geneva, and thence in course of time to the school in Syracuse, which might well enough, and proudly, look upon him as its foster founder.

### THE FAIRFIELD SCHOOL

Under an exceptionally able quartette comprising Lyman Spaulding, Westel Willoughby, James Hadley, and John Stearns, — all New Englanders by birth, — Fairfield got away to a good start, and the school soon won for itself a repute second to none. It from time to time suffered serious losses, such as that occasioned by Lyman Spaulding's withdrawal in 1816 apparently because of insufficient anatomical material for the needs of his department. Such gaps, however, were quickly filled, and during the thirty years of its existence many served on the faculty who were no less distinguished than the original four — T. Romeyn Beck, James M'Naughton, John Delamater, Reuben D. Mussey, and Frank H. Hamilton, to mention a few of them. They were the type of men who "thought less of borrowing character from their stations than of making it for the institution."

Environment, accessibility, buildings, and equipment have far less to do with the success of a school of any sort than the reputation and ability of its teachers. The presence on a faculty of a single person of the right character may serve temporarily to bring the reputation of any school into full flower only to have it fade on his departure. Such a man may be able not only to activate but to bring a friendly cohesion into a teaching group, which perhaps was even of greater importance in days when faculties were small. Naturally enough, men of this type



have always been in demand, and in pioneer days some of them played a manifold rôle nothing short of astonishing.

From among those who served to fill gaps on the faculty at Fairfield as their predecessors were enticed away, I may single out one of whom probably none of you has ever heard, for he will serve as well as would any other of his quondam colleagues to typify the peripatetic medical teachers of the day. My reasons for choosing John Delamater (1787-1867) are dual — one because he taught for a time at Geneva, so that you have claim upon him, and the other because I grew up as a lad in Cleveland in the tradition of his local celebrity as a man and physician.

Born in Chatham, New York, and coming from a medical family, Delamater, a man of Huguenot descent, had been one of the organizers at Pittsfield, in 1823, of the Berkshire Medical Institution, where my grandfather happened to get his degree the following year. In this school, which for a time during its forty-odd years of existence outrivaled even Harvard in the number of its pupils, he held the Chair of Pharmacy and Materia Medica, to which Obstetrics was subsequently added; but in 1827 he was called to Fairfield as Professor of Surgery in succession to the celebrated Dr. Joseph White of Cherry Valley, who had just retired. At Fairfield he resided for the next thirteen years, lecturing on a variety of subjects during the full term of Westel Willoughby's presidency of the college.

Such was his renown as an inspiring teacher during this period, he simultaneously held teaching positions in which he fairly boxed the compass of the medical specialties of the day, at Bowdoin (1829-1841), at Dartmouth (1836-

1840), at the Medical College of Ohio in Cincinnati (1838–1839), — one of Daniel Drake's many projects in that remote district which, medically speaking, he had made his own, — and at the short-lived Franklin Medical College of St. Charles, Illinois (1842–1844), the first school to be started in that state. On the closure of the Fairfield school in 1840, Delamater moved on to Geneva, where as Professor of Materia Medica and General Pathology he lectured for the next three years, though meanwhile he had taken up his residence in the Western Reserve.

As it happens, the very year the school at Geneva opened its doors for students, my grandfather Cushing, having found the rigors of winter practice in the Berkshire Hills rather too strenuous for his somewhat frail constitution, gathered up his books and office paraphernalia, including a formidable pair of Chamberlen forceps, and with his family went by the Erie Canal to Buffalo<sup>1</sup> and thence by stage to Cleveland, then a straggling village, infested with malaria, which nevertheless showed promise of growth.

Whether he had corresponded with his old teacher of the Berkshire School I have no way of ascertaining, but he must at least have known of his being in Fairfield at the time, and it is highly probable that he may have managed to see him. However this may be, it was just at this juncture (in 1835) that a project was on foot to start a university and medical school in a small town mis-

<sup>1</sup> The joys of such a trip at this period have been depicted in Mrs. Trollope's *Domestic Manners of the Americans*; and it is not impossible that my grandparents and Harriet Martineau may have been ignominiously prostrating themselves side by side at fifteen-minute intervals on the cry of "low bridge," for it was in the same year (1835) that she went West on the Canal during her abolitionist campaign.

leadingly called "Lake Erie" some twenty miles east of Cleveland, through which passed the Buffalo-Cleveland turnpike known as Euclid Road. The early faculty of this school was to be composed largely of former teachers or graduates of Fairfield; and they went so far as to get the name both of the town and of the so-styled university changed to Willoughby in honor of Westel Willoughby, of whom we have already heard, and he was indeed offered the presidency of the institution, which he felt unable to accept.

On the solicitation of his former pupils and colleagues, Delamater's interest in this new institution was aroused while still living in Fairfield, and he began lecturing in Willoughby in 1837 as Professor of the Theory and Practice of Physic, Pathological Anatomy, and Obstetrics. He moved to Willoughby in 1840, though for the next three years he retained his post at Geneva and returned each winter to give his lectures there. It was a species of leapfrogging from one school to another which would hardly have been possible later on when, villages and towns having grown into cities, local pride began to play a chauvinistic rôle leading almost universally to the selection of medical teachers from the community itself.

The school at Willoughby was short-lived, for it had as its president a rascally Mad Hatter who was both a demagogue and a politician. Dissensions arose, and Delamater with a number of others finally in despair resigned and moved to Cleveland, where in 1843 a new school, the present Medical Department of Western Reserve University, was started with Delamater as its first dean; and in this capacity he continued to serve until his retirement seventeen years later. He had thus had a teaching career



of thirty-eight years including professorships in nine different medical schools, and it was said of him that probably no single teacher of his time, with the possible exception of Daniel Drake, exercised so wide an influence on medical education.

With all this recital of what was going on a hundred years ago in frontier districts, we need not forget that there was a city on the lower end of Manhattan which was so far profiting by all this upstate activity and prosperity due to the completed Canal that it bid fair to supersede Philadelphia and Boston as the chief port of the country. Nor need we forget that in connection with King's College (now Columbia) there had been established by Samuel Bard in colonial days (1767) the third medical school in the country. It, however, is scarcely to be believed that this College of Physicians and Surgeons in New York City which had been absorbed by Columbia felt any more concerned about the possible rivalry of a backwoods school situated at Fairfield than did the Harvard Medical School about a similar institution remotely located in the western part of Massachusetts, however flourishing these frontier schools may have been rumored to be.

But in the matter of hospitals, so necessary for teaching purposes, the pioneer schools could not possibly compete with the rapidly growing metropolis, where, again through Samuel Bard's influence, soon after the Revolution the famous old New York Hospital on lower Broadway had been erected. But something more is needed, even by a metropolitan school, than a loosely affiliated hospital likely to be used by the attendants for their private ends and to whose wards students do not have free access. So it is doubtful whether the actual instruction in the grow-

ing metropolis was in any way better or different than that given at the time in the frontier schools.

### THE SCHOOL AT GENEVA

None of this, however, would concern us today had it not been that Geneva Academy had received a charter in 1826, giving it the right of conferring collegiate degrees and diplomas of all sorts whatsoever. And in this very year (1826) occurred the memorable revolt in the College of Physicians and Surgeons in New York City, when David Hosack, with five other scarcely less eminent members of the faculty, had withdrawn and had attempted to launch a rival school in the metropolis as the medical department of Rutgers (formerly Queen's) College at New Brunswick in New Jersey. This movement, after its first successful session, was checked by a legal interpretation that it amounted to an infringement of state's rights, whereupon Hosack and his colleagues, undaunted, made proposals to the trustees of what was now Geneva College that the Rutgers school be reorganized under their generous charter. So it came about that the circulars for this new school during the few years of its existence bore the surprising caption, "Rutgers Medical Faculty, Geneva College, Duane Street, City of New York."

It is, of course, on just such a basis that the Albany Medical School operates under the charter of Union College in Schenectady and that Cornell conducts a medical school in New York City, but in these early days great opposition was aroused in New York City to any such remote alliance, and the trustees of the College of Physicians and Surgeons, fearing that this new school with its eminent group of teachers promised to outrival the older Col-

lege, took the matter to the Supreme Court and in 1830 secured a decision that Geneva College had no legal right to conduct a school elsewhere than in Geneva itself.

This attempt to utilize Geneva's charter as the legal basis of a degree-conferring school in New York City was therefore short-lived, but it may possibly have suggested to that ardent Episcopalian, John Henry Hobart, and to the authorities at Geneva that they might well enough start a local school of their own. However this may be, — and there are conflicting statements regarding the source of the idea, — in 1834 the school and its teaching staff were organized and in the following year set in operation.

Unfortunately the school had no contemporary archivist and historian, so that intimate knowledge of its early concerns and affairs is almost wholly wanting. Nor need one suppose for a moment that either the trustees of the college or the teaching staff of its newly affiliated school were conscious of making history; they were merely meeting the obligation of supplying so far as possible the quota of practitioners needed for the home district — what Fairfield and Berkshire had already done and what Albany and Buffalo were soon to do in their turn.

Not until old attics have been ransacked for precious diaries and letter files that have come down through descendants of the founders will it be possible properly to reconstruct the story from behind the scenes and to learn all that one would like to know about the early days of the school.

From what information we have, it would appear that the original faculty, six in number, was composed largely of peripatetic lecturers of the type already mentioned — men possessed of far more than mere local repute and



experience. With the exception of the dean, they were all young and in their prime, only one of them having turned forty — just the age of those who happened some half century later to be brought together by Daniel C. Gilman and John S. Billings to embark under ideal circumstances upon a new medical adventure in Baltimore.

The first dean, however, Edward Cutbush (1772–1843), who incidentally held the chair of Chemistry, was of an older generation than the others and cut from quite a different piece of cloth. A Philadelphian by birth, he took his medical degree there in 1794 and shortly after entered the medical corps of the navy, in which he had a long and distinguished career both at sea and on shore until the time of his voluntary resignation thirty years later. He with his five junior colleagues, Thomas Spencer, Willard Parker, John G. Morgan, Charles B. Coventry, and Anson Coleman, formed a progressive group, which soon persuaded the Legislature to amend the regulations concerning the licensure to practise in the state of New York so as to give the diplomas granted at Geneva the same value as those issued by any incorporated medical society in the state. Thereupon Geneva promptly sent to the next meeting of the State Medical Society a delegate who was refused admission. Nevertheless, in spite of this rebuff, the school was soon one to be reckoned with, for it thrived and ere long had each year as many as forty graduates. Its rapid growth helped, among many other factors, to sound the knell of the school at Fairfield, three members of whose faculty in 1840 were transferred to Geneva: John Delamater in the Chair of *Materia Medica* and General Pathology, James Hadley in that of Chemistry and Pharmacology to succeed Edward Cutbush, and Frank H. Hamilton to succeed David L. Rogers in the

Chair of Surgery, thus restoring the teaching body to its original number after it had dwindled to four in the preceding year.

The arrival of this notable triumvirate from Fairfield was a windfall, and, coinciding as it did with Spencer's appointment as dean and the erection of a new building, the school forged rapidly to the front. The faculty was soon enlarged by the appointment of an anatomical demonstrator, one of the school's own graduates, and when Delamater was drawn away his Chair of Materia Medica and General Pathology was promptly filled by a man with a peripatetic career no less notable, Charles A. Lee.

One intimate glimpse behind the scenes of the school concerns an historical episode which reflects credit no less on the trustees and faculty than on the undergraduate body. Whether the medical students at Geneva were any less lively, not to say at times rowdy, than they were reported to be in other schools of the day may be doubted. Their ill-repute in this respect may well enough, however, have been emphasized as a background for their action in regard to the admission to the school of a woman student who had previously had her application refused at Philadelphia and by twelve of the then existent pioneer schools. To use a vulgarism, the buck had seemingly been passed from trustees to faculty (if indeed the trustees were at all concerned in the matter), and the faculty, being at a loss to know what to say, left the decision to the students. And they, it is said, uproariously and unanimously voted their approval and sent to the lady in question a resolution mentioning that one of the principles of a republican government is the universal education of both sexes, that doors should therefore be opened

equally to all, that her application met their entire approbation — in short, that she would be more than welcome.

In her autobiographical sketch Elizabeth Blackwell treats the matter somewhat lightly and hints that some of the students thought the application was a hoax perpetrated at their expense by one of the rival schools. But, however this may be, neither students nor faculty had any reason to regret their action; and one can scarcely read without emotion her brother's letter of January 23, 1849 to the "Beloved Relations" at home, describing the events of the Commencement day when she received her degree at the top of her class.

She was a remarkable woman, to whose name among its graduates any medical school might have been proud to draw attention. But whether the episode was of greater credit to the officials of the college, to the students who were given the privilege of making the decision and never regretted it, or to the woman herself may well enough be left unanswered. Just why her sister Emily's application for admission (1851) was rejected two years later is not apparent, nor is it recorded who on that occasion made the decision — very possibly this time the faculty. Emily Blackwell applied in vain in several other colleges and was finally accepted at Rush, which institution was promptly censured by the State Medical Society and she was asked to withdraw. She finally was received at the Western Reserve School and graduated there in 1854; and it is quite probable that the hand of John Delamater can be seen in this.

Not only the canal but the railroad which soon followed in its wake favored the rapid growth of the terminal cities. A school at Albany had been incorporated in 1838,



a few years after the opening of the institution at Geneva, but this probably did little more than absorb students who might otherwise have gone to Pittsfield or Fairfield. But a much more serious blow to Geneva's welfare was struck when in 1846 the medical department of the University of Buffalo was organized.

This new and rival school not only drew on the Genesee country for its students, but it made heavy inroads on the Geneva faculty as well; for, though they continued for a few years longer to give courses at Geneva, five of the more notable teachers — Hadley, Webster, Coventry, Lee, and Frank Hamilton — all transferred themselves to Buffalo. There with Austin Flint and John C. Dalton, who brought to America the new physiology from his teacher, Claude Bernard, they made for the next five years as notable a faculty of energetic young men as one could hope to find anywhere.

So, as time passed, it became increasingly evident that, while Geneva might offer a perfect setting for a college, its medical school, which had been so auspiciously launched and for a time played such a significant rôle, was booked to suffer the same fate that had befallen Fairfield. From the frail, well-thumbed *Catalogues*, *Circulars*, and *Annual Announcements* of the Medical Institution of Geneva College, so far as they have been preserved, one may feel himself actually in contact with the old school and can well gauge the ups and downs of its interesting career.

Through the '50s the school was evidently putting on a brave front; both spring and fall courses were being given; the *Circulars* contained the list of students but not of the graduates. By 1857, though James Hadley was still carried as Emeritus Professor, the names of the peripatetic pioneers had wholly gone. And after the Civil War the

former *Circulars* and *Catalogues* became replaced by flimsy *Annual Announcements* in which even the list of students no longer appeared. In the last of them, for the session of 1871-1872, the statement is made that

The Faculty have not deemed it expedient to extend the annual lecture term beyond the usual period, confidently believing that sixteen weeks' faithful attendance on public lectures, with the balance of the year devoted to earnest study under competent *private* tuition, in the office and at the bedside, is more advantageous to the student than a protracted course of public instruction, which is apt to grow tedious for want of practice to illustrate the subject, or to stimulate independent investigation.

While this reactionary statement could scarcely have represented the unanimous feeling of the faculty, it obviously was high time the school closed its doors. Reforms in medical education needed to meet new conditions in the country had long been agitated, by no one more ardently than by the redoubtable Nathan Smith Davis, a graduate of the Fairfield school who became the founder of the American Medical Association and was one of the great men of his time. But it had been an uphill struggle to dislodge the long-established system, which just at this time had received a severe jolt in one of the oldest schools in the country. There a young man had just been made president of the university under whose sheltering wing a medical department had contentedly and autonomously conducted its private affairs in its own private way.

The astonishment of the Harvard medical faculty can be well imagined when Charles W. Eliot, then in his thirties, began regularly to appear at their meetings and, what is more, chose to preside at them. I need not relate the story which has been often told of how some of the older teachers grew restive, and finally asked the reason

for all these proposed changes when the school had been running smoothly and well for a period of eighty years. After a moment's silence Mr. Eliot said: "I can tell you the reason — Harvard has a new president." And in his official report for 1869–1870 he said: —

The whole system of medical education in this country needs thorough reformation. The course of professional instruction should be a progressive one covering three years instead of four months . . . and the student should give his attendance at lectures and recitations, at hospitals and laboratories, during the whole year. The Medical Faculty have been actively discussing these much-needed changes and will shortly rearrange their program of instruction.

This announcement sounded the death knell of the schools of prevailing type which by no possibility could undertake to raise the endowment necessary to put the new system in operation. The faculty at Geneva must have clearly seen the writing on the wall, and a group of them, apparently under the leadership of John Towler and of Frederick Hyde, in the spring of 1871 approached the trustees of the newly chartered Syracuse University with the proposal that, if the local profession would favor such a movement, they would purchase from Hobart College the medical library, museum specimens, and laboratory equipment and make a fresh start here in Syracuse.

To this proposal the trustees responded favorably, as did the Onondaga County Medical Society, with the proviso that the new school should be conducted on the basis of a full three years' graded course. Whether this was more than the Geneva group had bargained for, in view of their expressed belief regarding the advantages of the traditional system as printed in their last *Announcement*, need not concern us. What is historically important is that



your school here at Syracuse was the first in New York State and the second in the country to replace the traditional but outworn order of things by progressive exercises for nine months in the year over a period of three years — a program to which other schools quickly conformed.

They were an exceptional group, the peripatetic teachers who lectured and taught in these early schools, and we may well doubt whether in our day and generation we do any better, if indeed as well, for the educational needs of our more complicated time. Most of them, we may be sure, have gone to the special Valhalla reserved for the frontier practitioners. And, since doctors are proverbially gregarious, one of the first things they did was to found a society of Pioneer Medical Teachers — naturally enough with Nathan Smith as its president and Daniel Drake its recording secretary. Like ourselves, in celebration of the founding of the school at Geneva, they have just held a meeting with a large and enthusiastic attendance. And, as is inevitable when doctors foregather, the perennial subject of medical education has come up for discussion — a subject on which no two doctors fully agree.

Westel Willoughby had just stated that, while one could begin to study medicine at any point and work centrifugally from it, there were distinct advantages in the old apprentice system which brought the student — under preceptorial direction, of course — face to face with the patient at the very beginning of his studies. In later days this program had been so far superseded that students were now industriously kept away from even the sight of a patient for two or three years while the so-called fun-

damentals were being rubbed into him, often by science teachers who wouldn't recognize a patient if they saw one, much less know what was wrong with him. To his thinking the patient, not science, was fundamental — the patient as such was always the same, a human being who sought advice, but science was a constantly shifting quicksand on which a doctor could keep no sure footing. Apart from anatomy, most of the so-called premedical sciences would much better be postmedical. "Do not the botanists," he added, "begin their subject with the identification and classification of the plant before they come to pull it to pieces and study it under the microscope? They don't oblige the student to puzzle over the chemistry of soils and the effect of solar radiation on the production of chlorophyll before they go botanizing." Whereupon, emphatically and heavily, he took his seat.

This purposefully provocative statement caused so much static that not all of what followed came intelligibly over the air, particularly as Nathan Smith was obliged frequently to resort to his gavel to keep any semblance of order. James Hadley stood up for the sciences, particularly chemistry, and taunted Lyman Spaulding for having abandoned so important a subject to demean himself by teaching anatomy and surgery when he left Hanover to go to Fairfield. Whereupon Spaulding appealed to his one-time preceptor in the Chair to ask whether he did not feel that medical teachers of the present day had become so specialized they could not possibly have a broad view of medicine.

To this, Nathan Smith replied that he was a prejudiced witness — that medical knowledge had advanced so rapidly no one could now expect to cover it all as he had once done at Hanover. He had observed with considerable

interest the tendency in some modern schools to adopt what was called a tutorial system under which groups of students were apportioned to a preceptorial tutor, which after all was getting back in a fashion to the old apprentice system. However, the tutor nowadays was usually a young man, often enough a specialist of sorts, who had had insufficient experience with medicine as a whole successfully to transmit to his pupils an understanding of the Art of its practice, the most important thing a doctor had to learn. He would like to ask John Delamater for his opinion of the matter.

Delamater responded by saying that the Art of Medicine was an intangible thing difficult to describe. No less a person than John Locke the philosopher had started to write an essay on the subject which he had left incomplete. But, so far as teachers and students were concerned, he doubted whether times had changed so very much. He had been watching with interest the career in Baltimore of the grandson of his old friend, Benjamin Welch, of Norfolk, Connecticut. This man could probably have lectured inspiringly on any subject in the curriculum had he been permitted to do so. And if pioneering meant working or teaching on the frontiers of knowledge, William H. Welch had been as much of a pioneer teacher as any old-timer in Valhalla. Knowledge was bounded by a wilderness seemingly as impenetrable as that which hemmed in the early settlers, and someone had to do the clearing. There was undoubtedly a tendency to over-specialization in modern medical schools, but this was recognized as an evil and some way would doubtless be found to correct it.

At this there were shouts from a dozen voices demanding to be heard, but the chair recognized Frank Hamilton, who said he disliked to differ from his old friend and



colleague of Fairfield and Geneva days. A classical education, modern languages, chemistry, and all that may be well enough for those who bled, puked, and physicked, but for the education of a surgeon what was needed —

We shall never know, alas, just what in his opinion *was* needed, for when the uproar ceased and quiet was again restored John C. Dalton arose to say that Frank had become a great surgeon chiefly because he had taught him some physiology when they were colleagues together in Buffalo; and for his own part he (Dalton) had reason many times to wish he had learned more surgery when he went off in '61 with the Seventh Regiment. Admitting that a certain lack of sympathetic understanding sometimes arises between science teachers and practical clinicians, he felt that this might be lessened if they were obliged occasionally to conduct one another's courses.

Whereupon N. S. Davis got the floor and stated that those of one era were scarcely capable judges of another. It was true that he had long advocated the replacement of the sixteen-week lecture courses by longer terms and graded exercises, and had made some headway with it in Chicago long before Harvard under Charles Eliot's insistence fell into line. But he would like to call attention to what had been said in that remarkable and scholarly address given by Edward Cutbush on the opening of the Geneva School. John Shaw Billings, the Curator of the Valhalla Library, had called his attention to the precious pamphlet, which was not to be loaned out else it would have been brought to the meeting. However, he had copied out this paragraph: —

If I possessed the power, no man should be permitted to enter on the exercise of the profession who has not been engaged in studying the various branches at least five years; and even after

that period, the life of a conscientious practitioner should be a life of *study, research, and reflection*.

What is more, he recommended for medical students not only a reading knowledge of French and of German but a classical education as well (which implied an academic degree), so that the ancient as well as modern medical literature could be followed. "Cast your eye," he said, "over the old *worm-eaten authorities* and you will often be astonished to find many *modern* opinions in an old-fashioned dress." And he then advised the students to form an association for mutual improvement as well as to promote a spirit of inquiry, where opinions of students as well as teachers might be examined and controverted, thereby removing the impression that "colleges are the dull repositories of exploded opinions."

This was followed by applause and shouts of "Speech from Edward Cutbush!" Whereupon Geneva's first dean modestly arose from his corner, saying, as he knocked the ashes from his pipe, that it was pleasant of his friend Davis to call attention to his century-old address, but that credit went to those who brought things about, not to those who saw the vision but could not ripen their time. Not until this man Welch, to whom reference had been made, had come on the scene and the Johns Hopkins Medical School been opened was his dream fulfilled. But he thought there had been enough talk. And, since one had to go to bed even in Valhalla, he would suggest that the secretary wind up the discussion and move an adjournment.

Thus appealed to, Daniel Drake arose, saying that in the course of his inkpot career, just two years before the Geneva School opened, he had written a book on Medical Education in which a graded course was outlined and at

the same time some plain truths told about the conditions then existing. However, while the old frontier which they had known and loved was of course gone, so far as he could see the pioneering spirit in Medicine was as much alive as it ever was. Nor could he believe that this spirit, after all, had much to do with what was called education. It was something in the student himself which indeed might easily be lost should a young man be forced into too confining an educational strait-jacket.

A farmer's boy from Lebanon, Connecticut, after a two years' apprenticeship gets a licence to practise medicine, enters the army, and when thirty-seven years of age, on the Island of Mackinac, grasps an opportunity to immortalize himself. You may protest that if he had been sufficiently trained in physiology and in chemistry he would not have been obliged to enlist the help of Robley Dunglison or Benjamin Silliman; but why should he not consult anyone he wished in his problem? William Beaumont will be remembered long after either of them. What preparation had Ephraim McDowell except an apprenticeship and a course of lectures, when in 1809 at Danville, Kentucky, on the edge of the wilderness, he performed the first ovariectomy? And there are many more such who had no Latin and Greek or French and German or preliminary biology and chemistry — not even an accredited M.D. degree until established medical schools began to fall over each other giving them honorary ones.

To be sure, these men had not been professional teachers of medicine in their day, but he saw no reason why they should thereby be barred from membership in the Valhalla Society. They and the practitioners of any of the pioneer schools who had made notable contributions to Medicine should certainly be eligible at least to an asso-



ciate membership. And, in view of the disorder which at times had attended the evening's discussion, he would further suggest that if the E. Blackwells were included their presence might have the same quieting effect on the club's demeanor Elizabeth's attendance had on the students at Geneva. He didn't feel so sure of Emily.

He then announced that at the next regular meeting, to be held two years hence, Dr. N. S. Davis would read a paper on "The Convention of 1846 and the early days of the American Medical Association." He wished to remind the members that the customary collation peculiar to medical societies, of crackers, cheese, and near-beer, would be served in the cloakroom, where doubtless the discussion on education would be continued — though never concluded.

## VI

### THE BINDING INFLUENCE OF A LIBRARY ON A SUBDIVIDING PROFESSION

Learning, as with water, is never more fair, pure, and simple than at its source. — NAUDÉ

THE dedication of a library is usually a commonplace event which calls for certain platitudes, perhaps even a prayer. The generosity of the donor is praised, the genius of the architect; the educational needs of the people (other than those present) are recalled, and assurance given that they will be met so far as a meager endowment permits. Attention is next drawn to the novel features of the building, and then, with some relief, all adjourn for lunch.

This, ordinarily, is the culminating feature of the program, for Nature, while providing all alike with a ready impulse to consume food, omitted to equip most of us with an intellectual hunger whose recurrent pangs can only be assuaged by the consumption of books, the invention of which she could scarcely have foreseen.

Meanwhile, no reference has been made to that important official, the librarian, who modestly sits in the background with napkin on knee cogitating over possible ways of developing, on the part of those within the radius of his activity, such conditioned reflexes as would salivate

*Address at the dedication of the William H. Welch Medical Library of the Johns Hopkins University School of Medicine, October 17, 1929. Reprinted from "Science," November 22, 1929, 70, 485-491, and "Johns Hopkins Hospital Bulletin," January 1930, 46, 29-42.*

them, no less promptly, at the mere sight of the printed page. A cafeteria system, perhaps, with appetizing books on view, rather than distant and uncertain books ordered *à la carte*.

Too often libraries are but the graveyard of forgotten books, whose oblivion is disturbed only by the exigencies of the time which has necessitated their transfer, for lack of space, from a smaller cemetery to a larger, where provision, usually inadequate, is made for books still alive and books yet unborn. There, according to age, family, place of origin, or circumstance, their epitaphs renewed and coverings repaired, they are redeposited in burial vaults, soon to be once more as forgotten as were the tablets of Sardanapalus, except by the stray seeker for the curious, or the occasional visitor whose interest lies in the tomb rather than in what it holds. To this sad end do books usually come. It is their ultimate destiny, at public or private expense, thus to get interred.

But there is a spirit world of books, and the ideas they contain wander forth to haunt and torment those whose grasp they can elude, to solace or stimulate those who have learned the secret of their capture. For these fortunate ones, it becomes possible "to be present as it were in every age — to extend and stretch life backward from the womb." From the spirit that hovers over some obscure volume, of parentage and birthplace unknown, times forgotten may be reconstructed, the sequence of discovery unraveled, the tendencies of thought traced, the relation of yesterday and tomorrow better understood.

This, then, is the true function of the library, to quicken the dormant book so that it may speak again; and with those who treat it lovingly and compassionately its spirit enters eagerly into communion. To these a library be-



comes a laboratory for the crystallization of ideas perhaps long expressed, out of which process new ideas have their birth.

Can witchery such as this come from a repository of books that record the by-gone happenings and hypotheses of so practical and forward-looking a profession as that of Medicine? Her concepts of one day are antiquated the next, and, busy with the accumulation of new facts, she spares little time to integrate them and thinks for the most part only in terms of the present. But philosophers tell us there is no present, that the event of the moment is already history; and if this be so, what is now taking place may possibly prove to have been one of the most significant of the many important things that have happened here since the formal opening of the neighboring hospital just forty years ago.

Ever since the University itself began to take form under the guidance of Daniel Coit Gilman, this place has been a crucible in which experiments in education have fearlessly been put to the test. There may yet be another that will center in this building, if he whose name it bears can long enough be spared properly to direct its course. Medicine has become so scattered and subdivided there is crying need for someone to lead it from the wilderness and again bind it together. And whether this can be successfully brought about through the ministration of a Chair of the History of Medicine in close coöperation with a great library, like all other things in life, depends less on principle than on personality. Let us, by looking back, endeavor to follow the steps of our prolific dismemberment.

We know from ancient records that physic "was early fathered upon the gods," and yet, though the physician in

the beginning was half priest, it was not beneath his dignity to put hands as well as thoughts to the therapeutic necessities of his art. Medicine was a compact whole, and the Æsculapian disciple heard the master expound the entire subject from authoritative codices. Then the doer was honored no less than the thinker, and, though his material was perishable, the doctor in his way might be no less an artist than those who carved with a chisel, painted with a brush, or built temples from stone and mortar — indeed he might be both, as once was Imhotep.

Though the story is veiled in great obscurity, we may assume that Medicine was still fairly compact when, in the eleventh century, Constantine the African was supposedly lecturing at the school — founded, legend tells us, by a Greek, a Jew, a Latin, and a Saracen — in that little seaside town of Salerno. But ere long, to the great misfortune of the maturing profession, a cleavage took place — the first of an unending series. The thinkers rose superior to manual tasks, and for centuries became involved in a metaphysical snarl of therapeutic subtleties which led them nowhere. The leech “try’d ev’ry health restoring Herb and Gum,” while the despised doers for the most part became degraded into bone-setters, tooth-pullers, or itinerant cutters for stone and the fistula. To anatomize the dead body other than to prepare it for burial was a desecration; to open it during life even for such trifling purposes as the letting of blood was debasing and was left to the barber. Not until long after, when the treatment of wounds by gunshot made the barber-surgeon more indispensable than ever in time of war, did his professional status, in a measure, come to be so restored that even to this day the army doctor, now mainly a health official, continues to be called surgeon.

All this has been often told, for early Medicine had not only its thinkers and doers, but its recorders. From Greek to Arabic to Latin, through the Dark Ages, the ancient doctrines were transcribed and transmitted, accessible only to the classical scholar. The doer meanwhile, educated for the most part solely in the school of experience, could write, if at all, in the vernacular alone, and in consequence we know less about him, for the simple reason that his fugitive compositions were literally read to pieces.

When in the course of time word went forth through Europe that some learned jurists of Bologna were publicly teaching there the principles of civil and later of canon law, like moths to a beacon students from both sides of the Alps, ultramontane and citramontane, secular and ecclesiastical, swarmed by thousands to the plains of Emilia. There a scholastic guild, representing the first organized university of scholars to be under civic protection, came into being; and promptly the inevitable cleavage into subsidiary guilds began to take place.

Separation rather than conglomeration, fission rather than fusion, is the natural law, and, what is more, it is a biological principle that all fissions occur with violence and strife. The interrupted motion picture has shown that so simple a process as the division of the single cell occurs with an agonizing wrench after a prolonged and unbelievable turmoil of the chromosomes. Could a similarly spaced picture of medical history — or any history, for that matter — pass quickly before one's eyes, it would show countless separatist movements accompanied by remonstrance, strife, even bloodshed.

So the *giuristi* of Bologna resisted mightily when the artists, the *artisti*, — including the students of letters, of



philosophy, of mathematics, and of medicine, — revolted and broke away from them to start an independent body with a rector of its own. This, then, was the beginning of segregation in the *Studium Generale*, and the process, once started, has acquired in the intervening centuries an ever-accelerating speed.

Out of the swarm of *artisti*, those students inclining to Medicine soon came to be the most favored and most flourishing group, and for a time, owing doubtless to the search through nature for influences and substances of possible therapeutic value, other subsidiary and allied arts came into being: the study of the constellations, of fossils, of minerals, of plants, of animals — of everything, in short, formerly embraced in that one of the three philosophies called natural.

One by one each of these studies, grown to its own estate, has come to be wholly separated off from the healing art as no longer strictly pertaining to it, botany after a lingering contact being the last, to our great loss, to sever its allegiance. So a succession of subjects, born of Medicine, outgrow their therapeutic application, renounce their further relationship to an art that would hold them subservient, and ultimately break away to pursue an independent course.

Medicine of those early days, based almost wholly on theory and observation, may be looked upon schematically as having the structure of a pyramid, all its accumulating subdivisions, even that of its first fundamental discipline, anatomy, meeting at the common Hippocratic point of the patient and his besetting ills.

All this, as is well known, came to be greatly altered when questions, by doubters, began to be asked about the meaning and causes of natural phenomena long regarded

as an expression of Divine Will; and soon came the gradual infiltration into the medical art of a novel method of study. No new thing, to be sure, to those who read their Galen thoroughly — but when it led to the discovery that the blood did not simply ebb and flow as had been universally believed, Medicine was shaken to its very foundation.

Slowly but surely this, the Baconian method of putting the intricate problems of the normal and disordered functions of the body to the test of experiment, made its way, receiving, as time went on, notable accelerations at the hands of such as Gilbert and Galvani, Boyle and Borelli, Mayow and Malpighi, Hunter and Haller, Magendie and Bernard and Pasteur and Cohnheim, and a horde of other originators, followers, and imitators. Thus, one by one, the biological sciences based on experimentation were born of Medicine just as were the observational and philosophical sciences of an earlier day.

History repeats itself, and in the comparatively rapid development of a new country like our own all that had taken place in the long-drawn-out development of Medicine we can see done over in miniature: the early priest-physician; the hereditary cure-mongers and bone-setters; belief in the supernatural, in magic and witchcraft; the art handed on by example from Æsculapian to apprentice; the gradual establishment of schools in which the entire field embraced by physic, surgery, and sanitation, with a substratum of anatomy and immature chemistry, might even be covered by a faculty of one as it once was by Nathan Smith at Dartmouth. Even after the experimental method came to have its first exemplar of note in the person of William Beaumont, Medicine remained compact, its attention riveted on the care of the patient as

definitely as in those Arabian times when all was comprised in the "Canon" of Avicenna.

But here, as in older countries, the experimental sciences were rapidly coming of age, and by the time this medical school opened its doors certain of these subjects had reached that stage of maturity where they were accepted as preliminary essentials to a medical course, equal if not exceeding in importance even the study of anatomy, which from the days of Mundinus in Bologna had thus far held sway as the major premedical discipline.

And so a new educational structure came to be put together on lines quite different from the old pyramidal conception of Medicine, at whose therapeutic apex sat doctor and patient. The structure may be said to have assumed a cuboidal form, like two sets of boxed books on a shelf, the first set dealing separately with the three newly matured basal sciences, the second set with the three major and time-honored clinical subjects of physic, surgery, and childbearing, while between the two sets was slipped in the book of pathology as intermediary in subject matter.

It was a block system, all departments being on an equality and more independent than interdependent. That each of them, as was natural enough, had an eye on the development of its particular branch of medical science or art, and a progressively enlarging blind spot for its relation to the other branches, was probably more apparent to the student-pawn, as he was advanced from one block to another, than to the larger pieces constituting the faculty. To be sure, disadvantages of the system from the standpoint of educating practitioners of medicine were largely offset in the early days of the school by the intimacy and ardor of a small band of enthusiastic workers, who would



have made an educational success of any program, but that is quite apart from this recital.

It is a matter of unwritten record that some twenty-five years ago, when on Osler's resignation the first break in the original faculty occurred, a revolutionary proposal was made by some of the junior members of the faculty that the structure of the School be reorganized in such a way that the existing departments could be brought together — Hippocratized, as it were — by the creation of a *super*-Professorship of Medicine. It was thought that influences could thus be brought to radiate through all departments, existent and future, so that, while retaining their former autonomy, they could nevertheless show a united front in attacking some of the greater problems in Medicine which equally concerned them all.

The suggestion, in short, was to pyramidalize the School under the leadership of the one person whose training, experience, and personality eminently fitted him for such an apical position, and to whom all would have been eager to render allegiance. It was not solely because he was a pathologist and was thus already in contact with all other existing departments, but more because of his broad vision and his wisdom. In our shortsighted and youthful enthusiasm it was felt that a like opportunity for a successful centralizing movement would be unlikely ever to occur again. There was one, and only one, serious difficulty that stood in the way of carrying the project through — the man chiefly concerned, when the matter was broached to him, for reasons of his own refused the job.

So here and elsewhere, during the twenty-five years that have since passed, the old system of progressively increasing decentralization has gone on with a successive splitting off from both preclinical and clinical departments

of new groups, many of which slowly have attained sufficient strength and dignity to be recognized as independent units.

More and more the preclinical chairs in most of our schools have come to be occupied by men whose scientific interests may be quite unrelated to anything that obviously has to do with Medicine, some of whom, indeed, confess to a feeling that by engaging in problems that have an evident bearing on the healing art they lose caste among their fellows. They have come to have their own societies, separate journals of publication, a scientific lingo foreign to other ears, and are rarely seen in meetings of medical practitioners, with whom they have wholly lost contact.

A distinguished physiologist recently, in commenting unfavorably on the cleavages which have taken place in physiology alone, and on the impossibility of one man's keeping pace with the advances in its varied subdivisions, suggests that physiology as applied to Medicine might well enough be recognized as a science distinct from theoretical physiology, an admission, it would seem, that the subject — and the same is probably true no less of other sciences still clustered about Medicine — has outgrown its rôle as a strictly premedical discipline and is preparing for a life apart on the grounds of incompatibility of temperament.

So the independent science of astronomy emerged from the days when diagnosis was largely a matter of prophecy wrapped up in divination and zodiacal horoscopes, of which we still have trace in the modified emblem of Jupiter that traditionally begins all our prescriptions; the judicial astrologer of old knew nothing of Millikan's cosmic rays, but assumed the presence of something akin to them.

So an independent botany has emerged from the search in all corners of the earth for medicinal herbs that conformed to the therapeutic law of signatures; our medical schools no longer have their physic garden, yet who knows what of value equal to digitalis may still be hidden in plants, were there modern Witherings to look for it?

So zoölogy has grown from the search through the animal kingdom for ingredients with which prescriptions were once littered — the blood of the weasel, the droppings of the dove, the horn of the unicorn, and from the hyena alone, according to Pliny, some seventy-nine medicinal substances. We now smile at the idea of *Animalium natura et eorum medica utilitas* as a serious subject ancillary to Medicine, forgetting our present use of the oil of the cod's liver, the tendons of the kangaroo, the thyroid of the sheep, and much else for which posterity will similarly smile at us.

So modern chemistry, in the hands of Paracelsus, began to take form out of earth, water, air, and fire, and the "black art" of ancient alchemy. So the science of dynamics is inseparably linked with a young medical student named Galileo and the story of the pulse. And so we may expect other sciences bred of Medicine, whether essentially observational or experimental, to leave home when they have reached independent maturity. Thus, for better or for worse, the gap between the medical sciences and clinic, always difficult to bridge, becomes ever widened as their application to diagnosis and the therapeutic art comes less and less to be emphasized in the course of their presentation to students of Medicine.

Slowly but surely, as a reaction to the block system, as described, each of the clinical departments has shown a tendency to become separately pyramidalized in such a



way as independently to include in its own organization so much of the experimental sciences as is applicable to its particular interests and necessities — miniature medical schools complete in themselves, each striving for its separate institute, its own several laboratories for experimentation or diagnosis, its own library, separate organs of publication, and so on. It would be entirely logical if a university department of medicine or of pediatrics or of psychiatry or neurology, or what you will, came to install its own operating plant and to direct its own surgical therapeutics; or, on the other hand, if out of surgery there should develop an independent school with a substratum representative of all other departments, clinical and pre-clinical, teaching its own applied anatomy and physiology and chemistry and pathology, similar in organization to that remarkable institution in Rochester, Minnesota, a product of our own time.

The only check to the successive formation of these independent institutes, within our medical schools as now organized, is the capacity of the university purse: the only ties that remain in most places to bind separating departments together are the students, whom as yet they share in common and who for long are at a loss to know what Medicine is all about — its emblematic serpent having become so hydra-headed. Were they not a far more docile body than in those Bolognese days when students elected their own rectors, they would, I fear, pick up their more favored teachers and swarm in a body to set up a “studium” of their own liking in some convenient new-found place.

And meanwhile, almost too new to mention, still another fission, the entering wedge to which was driven by Pettenkofer a short fifty years ago, has occurred before our very eyes with the development of separate schools

of hygiene for the training of public-health officials — schools in which mass prevention in place of individual cure is properly emphasized. It is a movement grown out of that revolutionary maxim that the health of the people is the supreme law; it assures a much safer and more pleasant world to live in; it has greatly increased the expectancy of life and may even serve to prolong the span once allotted to us by the Psalmist. But, owing to it, just so many more people will remain longer alive to need at some time or other the personal ministrations of a modern Sydenham for their “vapors,” a Cadogan for their diet, a von Graefe for their sight, a Bright for their kidneys, a Mackenzie for their hearts, and a Lister for much else.

What possible relation, you may well ask, does this rapidly moving account of the cleavages in Medicine, past and apparently on the way, have to the dedication of this library and its inseparable association with the establishment of a Chair of the History of Medicine? Will this foundation merely mean still another group of specialists having their own societies, organs of publication, separate places of meeting, separate congresses, national and international, and who will also incline to hold aloof from the army of doctors made and in the making? Without lessening the opportunity and encouragement for historical and bibliographical research, on the part of those rare and highly gifted persons capable of it, is there not something far more important for Medicine that can radiate from here?

In the modern development of the physician into a scientist, have we not lost something precious that may without risk of pedantry be brought back to Medicine? Not only has the art of healing, *die Heilkunst*, come more and more to be lost sight of as the doctor arrives at his



diagnosis in the laboratory rather than at the bedside, but less and less does he care to be reminded that poetry, history, rhetoric, and the humanities once had close kinship with natural philosophy when the *doctores medicinæ* took the leadership among the *artisti*.

The doctor, widely speaking, is woefully ignorant of the history of his profession; indeed he regards bookishness as a form of swank. Some years ago my friend E. C. Streeter and I requisitioned a booth at one of the Atlantic City meetings of the American Medical Association in which we displayed a collection of books, pictures, and so on, pertaining to André Vesal, known as the father of modern anatomy. Alongside of us were stalls in which infant foods, the latest thing in hygienic corsets, the newest tooth powders, the latest surgical instruments, novel electrical appliances, x-ray machines, lighting devices, and so on, were being competitively displayed. Streeter was to be on hand to show our wares in the mornings; I was to officiate in the afternoons. In large letters the display was labeled VESALIAN EXHIBIT. "How did it go?" I asked my companion eagerly at lunch on the first day. "Was there a large crowd? Did you need help?" "Well," said he, "one man stopped long enough to inquire if I had any samples, and when I politely asked to what he referred, he pointed to our sign and said rather tartly, 'Samples of vaseline, of course.'"

This story, a little overdrawn perhaps, is reminiscent of the common belief that the discovery of listerine was what brought Lister fame. A pot of vaseline would conceivably have been of more practical use to the inquiring doctor; but I am not so sure of that, and our mistake lay in not having a sample of our exhibit to hand out. It might have made a different man of him.



"I have addressed myself to the Muses," said Gabriel Naudé, "without being too much enamour'd of them; I was pleased with my Studies, but not too addicted to them. . . . Pedantry might have gained something upon my Behaviour and Carriage, during seven or eight Years that I staid in the Colleges, but I can assure myself that it obtained no Advantage over my Spirit." Can something of this old-time spirit of scholarship be recaptured, and is it in any way incompatible with the spirit of research? Can separating departments again be brought together by the tie of a library shared in common, and by the renewed consciousness of a common ancestry and a noble history? Certainly, could this happen anywhere, this place, which has been the proving ground of so many experiments in medical education, would seem the most favorable.

A medical historian and one of the world's great bibliographers played a highly important rôle when this medical school was in the making. But curiously enough that modern Naudé, John Shaw Billings, when his plans for the hospital were drawn, made scant provision for a library. His mind was evidently on larger things — on the general principles of organization and construction of a place where, as he expressed it, the student's knowledge was "not to be acquired from textbooks or lectures, but from observation, experiment, and personal experience." He doubtless took it for granted that a library would come into being, as it soon did, for books were essential to the activity of that closely knit group of young men, all on the sunny side of forty, who first gathered here.

The story of those days can be easily reconstructed from those incomparable early volumes of the hospital *Bulletin*, a new thing in American medical journalism so

ably directed by that man of many parts, Henry M. Hurd, historian, editor, psychiatrist, and hospital administrator, all packed into one frail but scholarly body. The footprints of Osler are seen in the early establishment of a Journal Club, which met, each Thursday afternoon, in the convenient room soon set apart for a library, to review and discuss articles from the contemporary literature relating to the day's work. And next came the formation of a Hospital Medical Society, which, according to an announcement in the first issue of the *Bulletin*, was to forgather under the presidency of W. H. Welch on the first and third Mondays of each month.

For one of the early meetings of this society Dr. Billings brought over from Washington forty-four carefully selected volumes, ranging from a fifteenth-century MS. of Rogerius Parmensis down to the first edition of Jenner's *Inquiry*, which served to illustrate the discourse he then gave on rare medical books. A surprising number of that early group showed an interest in medical history, and we find ere long in the *Bulletin* this announcement: —

The first meeting to organize the Johns Hopkins Hospital Historical Club was called to order by Dr. Osler in the Hospital Library, Monday evening, November 10th, 1890 at 8 o'clock, 30 gentlemen present. Dr. Welch was elected president and Dr. Reese secretary. Dr. Welch made brief introductory remarks to show the value of historical studies to the physician. . . . He presented several histories of medicine and commented upon the merits of the various historians.

The society soon launched itself on a methodical survey of medical history that began bravely enough with a study of the Hippocratic writings. But the next year, in the effort to plumb the depths of Galen, the Club nearly foundered, proving the wisdom of Garrison's advice that



the beginner should back up into the subject rather than start out with its obscure origins. And so the ambitious program came to be abandoned, the often delightful though desultory papers and essays that characterized the monthly meetings of later days being substituted for it.

Dr. Billings meanwhile had been coming over from Washington to deliver two courses of lectures — and prophetic were his chosen topics. One was on the subject of hygiene, which after an interval of some thirty years attained its majority in the establishment of the great institute across the way. The other course of lectures was on medical history, a subject which now, in turn, will have full opportunity for development under the fostering care of the same person who is reported as having said, nigh forty years ago, what he doubtless still believes, that “the study of the history of the various medical doctrines broadens a physician’s view and liberalizes his conception of his profession.”

Dr. Billings’s afternoon exercises in those early days, based presumably on his recently delivered Lowell lectures, were, I grieve to say, but slimly attended. Even with his rare gifts it was almost too heavy an historical meal for the undergraduate, and the members of the residential staff had come to find themselves under so great a burden of bedside responsibility that their attendance was prevented. So when Billings moved to Philadelphia, on his retirement from the Surgeon-General’s Library after the completion of the first series of the *Index Catalogue*, the formal lectures were brought to an end.

They came, however, to be replaced by something far more palatable to the students: the Oslerian method of slowly but surely arousing an historical appetite by the proper touch in each exercise upon the historical bearings



of the subject under discussion, whatever it might be — an eponymic question asked, the original source-books passed around, a paragraph read, a picture shown, or an incident related. In this way, by the process of repeated inoculations, many students who unquestionably would have sidestepped a formal course of lectures became unconsciously impregnated with something much more valuable to them in the long run than the acquirement of just a few more facts concerning diagnosis and treatment.

It will be apparent, I hope, from all that has gone before, what is the burden of my theme: a library made useful not as a passive but as an active force; one that is “not vocational but cultural, not final but initiative”; one that will serve as a common meeting ground, where the different streams of knowledge may coalesce; one where an interest in the history of our great profession will so flourish as to permeate into all departments of a much divided school; a place from which the appeal of scholarship free from pedantism will radiate to long generations of future students — a place, in short, where Medicine, the foster mother of the sciences, once more in close contact with her whole family, will imbue them all with the spirit of that ancient phrase, “Where there is love of humanity, there will be love of the profession.”

As was true a quarter of a century ago, so is it no less true now that there is but one man who by universal accord has the qualities of a conciliator needed to bring these possibilities to fruition — a man whose services to his profession and to this School are apotheosized by this building — a man who can see the reasons for things while most of us can but look for the things themselves, and who is aware “that as our own conquests could not

have been won without those which our fathers won, so must the future forever rely for help upon the past."

He might have asked to be allowed to approach in quiet the evening of life, content with the many successful parts he has already played, but this was not his way. Few know how he has labored during the first sabbatical year he has ever taken, what hours he has spent in cramped, dark, and unventilated places in order personally to select and bring together what are to be the tools of this new Institute that bears his name, never a day without work, never a conversation without its direction on something that mattered. In accepting this new and important rôle he stands, to paraphrase some well-known lines, upon the summit of his years: not bowed beneath their weight, with feet firm planted and soul undaunted, he stands and contemplates what time has wrought, and trembles not for what was, is, or is to be.

## VII

### PSYCHIATRISTS, NEUROLOGISTS, AND THE NEUROSURGEON

PERMIT me at once to convey Yale's greetings to McGill on the occasion of this highly significant ceremony. At the same time, since I have been asked to speak briefly about the surgery of the nervous system, I may, unsolicited, venture to bring to you the felicitations of the enlarging group of surgeons who restrict themselves to this specialty in our two adjoining countries.

The frontiers which separate us are of concern only to politicians, cartographers, and customs officers. To the medical profession — there being no tariff on our exchange of doctors and nurses — they are to all intents and purposes nonexistent. We, on our side of the line, continue to be vastly in Canada's debt for sending us, among others, the incomparable Osler. It was his *Text-book* that aroused the interest of Mr. Rockefeller in Medicine and led to the establishment of the foundation bearing his name, which in turn has made possible the erection of this Institute, whose director we have thrown in for good measure. Even so, the account is by no means yet squared.

On three former occasions I have naïvely undertaken to review the existing status of neurological surgery; once in 1904, again in 1909, and for the third time just after

*Address at the opening ceremonies of the Neurological Institute at McGill University, September 27, 1934. Reprinted from the "Yale Journal of Biology and Medicine," January 1935, and "Neurological Biographies and Addresses," Oxford University Press, 1936.*



the Great War. I shall spare you from any such undertaking now, but the last of these papers<sup>1</sup> ended with the account of a project which may serve as a suitable text for my brief address today.

As the War drew to a close, a small group of overseas medical officers, whose official positions had thrown them closely together, found themselves disinclined to return to their former humdrum professorial tasks. In talking the matter over they conceived the idea of founding a national institute of neurology whose primary purpose was to aid the government in supervising the further treatment of the disorders and injuries of the nervous system sustained by our soldiers. This unquestionably was an urgent matter, and the sooner it was got under way, before the returning veterans were scattered in their far-flung communities, the better for all concerned.

At the same time it was fully appreciated that the opportunity to shed light on many unanswered problems by the comparative study of carefully selected cases would only occur again after another war had provided a like mass of material. So we looked forward to having not only suitable wards for organic, psychopathic, infectious, and neurosurgical disorders, but also a well-equipped operating suite, proper laboratories for neuropathological investigation and experimentation, a working library, and a new organ of publication.

With this primary task of caring for the veterans well under way, it was our ambition to have the organization grow into a postgraduate school for those whose interests pointed toward neurology or any one of its many bypaths. It was anticipated that with a national center of this scope

<sup>1</sup> The special field of neurological surgery. *Archives of Neurology and Psychiatry*, 1920, IV, 603.

all local groups engaged wholly or partially in similar work would wish for the common good to become automatically affiliated.

Were such an institute to be put in operation and kept out of politics, we on our part, as whole-time servants freed from the distractions of private practice, agreed to devote the remainder of our working lives in the effort to make it a success. Thomas W. Salmon, because of his proven administrative ability and wide experience with the sociological aspects of mental disorders, was naturally regarded as the ideal person to act as director. Sidney I. Schwab was to be in charge of neuropsychiatry; Daniel J. McCarthy of organic neurology. Neurosurgery was to be my province, and Lewis H. Weed, who had been in charge of an experimental laboratory for the study of nervous diseases under army auspices, had agreed to become director of laboratories. From the distance of France it looked to us like a worth-while project.

Doubtless many other groups of men on foreign service had similar exalted ideas of what they might be able to accomplish for their profession and country on their return to peace and home. Having been held officially responsible for the proper care of such casualties as came in our respective departments in France, we had duplicate records of a large number of the more serious wounds or disorders affecting the nervous system which would have given us a good start. In retrospect, the government might have been saved some of the hundreds of millions of dollars that have since been expended largely on the care of these very patients. But when it was suggested that the erection and maintenance of such a supervising institute as we had in mind might cost ten millions, this was looked upon as fantastic.

We then appealed to the Rockefeller Foundation, where we had a warmer reception, and for a time it seemed that the program might be put through. Unhappily, to make the story short, we met with opposition from certain influential quarters; the undertaking finally was abandoned; and we one and all drifted back to our former academic positions. Disappointed as we were, I like to think the seed did not fall on wholly barren ground, and that our long-forgotten project may have eased the way for McGill to establish this unit, which, let us hope, will set an example to be emulated by large university centers elsewhere.

One reason for reviving this old story is my interest in your having chosen, in spite of its many functions, to call this a neurological rather than a neuropsychiatric or neurosurgical institute. While we all will agree that its name is of less importance than what an institution or a society does, nevertheless it is desirable that it should with brevity at least connote its several activities. Evidently you have decided, as we had done, that the simple designation "neurological" serves this purpose best.

Psychiatry, to be sure, had been a recognized specialty longer than neurology; it had received a great boost in the allied armies during the War, and we had agreed upon a psychiatrist as the ideal director of our post-bellum project. Yet it had seemed clear to us that organic neurology supplied the only possible link to hold all interested parties together for their mutual advantage. Unquestionably a proper foundation in organic neurology, neuropathology, and physiology should be the starting point for psychiatrist as well as neurosurgeon; and, while they once seemed very far apart, a year's close association with Adolf Meyer in Baltimore had given me ample reason to know



how profitable to both parties such a contact might be.

No one of us here assembled has any doubts regarding the great importance of the disorders of the nervous system; yet neurology as a major discipline finds itself pretty much throughout the medical world playing a secondary rather than primary academic rôle. Those who were present at the ardent discussions of the subject held three years ago at the International Congress in Bern had this fact clearly brought home to them. Many professors of Medicine have had a personal interest in these particular disorders and, with the example of pediatrics before them, have been loath further to dismember Medicine by surrendering this work also to others. Such a reaction is a natural one, and we have all known of places where the neurologist has played a similar rôle in preventing the upstart neurosurgeons from having their own beds and patients. We all appear to be in the position of taking things away from one another — his problems, be he an investigator or teacher; his bread and butter, be he a practitioner. This has been so from the beginning of Medicine; and the surgeon, in the process of his becoming as much of an "internist" as the physician, has unquestionably been one of the great offenders.

The psychiatrist meanwhile has suffered less than others from trespassers on his territory, no one (until recently) having shown great eagerness in sharing his work; but, having grown out of the alienist, he has been victimized in other ways. Along with his patients, he has usually been segregated in some outlying institution, out of close contact with others, where his work has often been largely administrative. To be sure, in his isolation he has been hampered neither by the internist nor by the pathologist, for he makes his own diagnoses and conducts his own

post-mortem examinations, at which admittedly little is found to provide an organic basis for the psychoses he has so elaborately classified during the life of his patients. Yet now the neurologist, elbowed out of some of his previous activities by neurosurgeons, shows signs of an increasing interest in the psychoses and a desire to have a larger share in their treatment.

Dealing, as we clinicians do, from our several different lines of approach — psychiatric, neurological, and neurosurgical — with the most important subject in Medicine, how can we expect to make unimpeded progress and meanwhile rid ourselves of the subtleties and futilities that beset us unless we advance together as a common group along some new path? What each of us has to contribute we must generously share, and at the same time, being members of the same family, we may be permitted to discuss our separate origins and trends without misunderstanding or giving offense.

The prime movers unknowingly responsible for the present-day specialistic tendencies in our separate fields are perhaps not difficult to trace. Let us look first at modern psychiatry, which covers only a brief period in the age-long and sorry record of the world's attitude toward insanity. The torch of many a reform had been lit only to burn itself out until, at the end of the eighteenth century, a new spirit of humanitarianism began to make itself generally felt. It was commiseration for the incarcerated insane, whom the public could visit and torment for a small admission fee, that almost coincidentally led Chiarugi in Florence, William Tuke at "The Retreat" in York, and more spectacularly Philippe Pinel, first at the Bicêtre and later at the Salpêtrière in Paris, to allow them some measure of freedom.

It does not lessen Pinel's stature in the slightest to suggest a background of Scottish common sense in his belief that the patient himself is the most instructive book of Medicine. While still at Montpellier he had begun to translate the fourth edition of Cullen's *First Lines of the Practice of Physic*, and this, his first recorded publication, he saw through the press after he had gone up to Paris.<sup>1</sup> Nor need we forget that behind Cullen stood his predecessor, Robert Whytt, whose *Disorders which are commonly called Nervous, Hypochondriac or Hysterical* (1764) was a work of wide influence.

The medical world at this time had been wallowing in the controversies of philosophical physiologists and systemists over chemical *versus* physical causes of disease, over the vitalism of Stahl *versus* the mechanism of Descartes, over sthenic *versus* asthenic states, and so on. But there was always difficulty in any of these systems about the "rational soul" and its participation in vital phenomena. Mechanists though they were, the Cartesians thought best to provide for it and placed it in the pineal body. Similarly van Helmont, iatrochemist though he was, conceived of a sensorimotor soul which he located in the pit of the stomach,<sup>2</sup> having once on a time fainted, it is said, after being hit there. But on the Stahlian doctrine the anima or psyche, though unlocalized, was paramount both in producing and in curing disease. So, as I understand it, the conception of the "distraught psyche" entered the medical scene from the University of Halle, and, by

<sup>1</sup> *Institutions de médecine pratique*. P. S. Duplain, 1785, 2 vols. There is a copy of this rare book in the Bibliothèque Nationale.

<sup>2</sup> There have been many other guesses: Diogenes in the heart; Empedocles in the blood; Sömmerring in the cerebral ventricles; Digby in the septum lucidum; Lancisi in the corpus callosum; de la Peyronie in the fornix, etc.



emphasizing the psychoses in contradistinction to the long-talked-of neuroses, prepared the way for the psychiatrist or psychiatrist.

### THE PSYCHIATRIST

Granting the importance of Pinel's *Traité médico-philosophique sur l'aliénation mentale* (1801), what really opened the door for modern psychiatry I take to have been the two German works published half a century later, one by Ernst von Feuchtersleben of Vienna, on *The Principles of Medical Psychology*, and the other by Romberg's successor in Berlin, Wilhelm Griesinger, on *The Pathology and Therapy of Psychic Disorders*.<sup>1</sup> Ever since that time the scientific study of mental disease has been largely in German hands, possibly culminating in Kraepelin's experimental psychology and his simplified classification of mental disorders.

Psychiatry's chief weakness, however, still lies in the want of any pathological basis for its classifications and concepts. To be sure, in the case of general paresis the discovery of the treponema in the cortical lesions, followed by Wagner von Jauregg's demonstration of how one disease may be set to cure another, is a notable exception, but this example only serves to emphasize the general rule. It is but a drop in the bucket when we consider the psychological or psychiatric problems that in some measure affect nearly every patient in all departments of Medicine.

Inevitably there are some who emphasize the somatogenic and some the psychogenic features of disease. That the condition of the body has a remarkable effect on the

<sup>1</sup> Both books were promptly translated into English and published by the Sydenham Society.

mind all must from their own experience have come to be aware. Conversely, that an agitated mind exerts a disturbing influence on the functions of the body, even to the point of causing organic lesions, is a common enough experience, particularly in troublous times such as we have been going through. All sensible doctors in all epochs have been cognizant of the interaction between soma and psyche, and have had the patient's total personality in mind even while concentrating their attention on the diseased organ or part.

Mental healing, indeed, is the oldest recorded form of treatment for illness, though Mary Baker Eddy was one of the first successfully to capitalize the idea under the dangerous formula that disease doesn't exist but for thinking so. Still, I suspect that Christian Science — as did also the short-lived Emmanuel Movement, similarly based on augmentation of suggestion through religious assembly — has brought peace of mind more pleasantly to a far greater number of psychasthenic people than have the recent disciples of Freud. Psyche was personified as the beloved of Eros by the Greeks, but they didn't waste hours of time in oft-repeated sessions analyzing the consequences.

No longer do we ascribe all mental derangements to black bile as did that layman somaticist, Democritus Junior, three centuries ago, and many physicians before and after him. But then, for the four humors we have merely substituted hormones — too many, indeed, to keep count of. But to Freud and his disciples (though they have not put it in just that way) only one of them is of vital importance: namely, the gonadotropic hormone secreted by the pituitary body. No longer is bile the chief source of melancholy; no longer do we give borage and hellebore to purge the veins of it. Since hypopituitary patients ap-

pear to be exempt from psychoses, sexual or otherwise, this gland must therefore be the abiding place of the so easily disturbed psyche. The idea might be worth looking into. At least it's a better guess than that made by René Descartes.

All this of course is nonsense — and to come from a surgeon, of all people! But, being obliged because of his hazardous tasks to keep his feet on the ground, the neurosurgeon is very much puzzled about the mind, which in all of his exploring he has never been able satisfactorily to locate, much less feel or see even in the left hemisphere, where it is reported to abide.

Yet, whatever and wherever the psyche may be, it can be hardly the same after once being thoroughly upset by an ill-judged psychoanalytical séance. And I suspect that Christian Science converts are never quite what they were before, however uplifted in mind and superior to disease they may subsequently feel. So far as I know, they've not yet been psychoanalyzed as a sect; and they might prove to have a more stable mentality than those who have no religious anchor to windward of any sort whatever. As for psychoanalyzing the psychoanalyst, it is said in Burton's *Anatomy*, which will outlive all the textbooks on psychiatry ever written, that

When all are mad, when all are oppressed,  
Who can discern one mad man from the rest?

While all this is a subject in which a surgeon quickly gets out of his depth, yet he finds himself comforted when so eminent a physiologist as Sir Charles Sherrington<sup>1</sup> admits to some conception of how, through signals, that

<sup>1</sup> *The Brain and Its Mechanism*. Rede Lecture, Cambridge University Press, 1933.



“gigantic combining mechanism,” the human brain, operates — but of “the manifold variety of mind” and “how the brain does its thinking” none whatever.

This admission by Sherrington, it is true, was promptly challenged by a no less distinguished morphologist, Sir Grafton Elliot Smith;<sup>1</sup> yet even he, while more hopeful, can only say that “the most significant factor in the evolution of the mind was effected when the direction of movements was transferred from the midbrain to the neopallium,” where it became a consciously directed process through a circulation of nervous impulses between it, the thalamus, and the hypothalamus. Pavlov, to be sure, has offered a physiological concept of the obsessional neuroses, based on the emotional interruption of conditioned reflexes; but we must nevertheless admit, in spite of all this, that psychophysiology and psychomorphology fail to give the psychologist any secure point of anchorage, and psychopathology gives the psychiatrist practically none at all.

It has always been true that the less one knows of the precise seat and nature of a given disorder, the more numerous and complicated are the prescriptions advocated for it. Something of this sort may account for the many schools of psychotherapeutics and their flourishing state, for they have been well advertised. The most damning criticism of Christian Science was what Stephen Paget once said of it — that it would never reach the indigent; and I rather suspect this may also apply to psychoanalysis. One may draw his own conclusions.

A distinguished psychiatrist has recently stated that “with the mental-hygiene movement, the widespread

<sup>1</sup> *Evolution of the Mind*. Supplement to *Nature*, Feb. 17, 1934, p. 245.

child-guidance clinics, and resultant education of the public, civilization will rise to still higher achievements, and the psychoses and neuroses will ultimately disappear as mankind advances toward racial and individual perfection." Let us hope this may be true; optimism is a blessed thing.

### THE NEUROLOGIST

The prime movers of modern clinical neurology as a specialty we may likewise without great difficulty trace. To be sure, from the time of Sydenham many classical descriptions of nervous diseases which to this day remain eponymic have been left by physicians, no one of whom would have thought of calling himself a neurologist. But just a century ago a virile seed was sown in Germany when Moritz Romberg, the professor of medicine in Berlin, established a propædæutic clinic that foreshadowed his epochal *Lehrbuch der Nervenkrankheiten des Menschen* (1846), in which diagnosis was chiefly emphasized.

At about the same time, another no less vigorous seed was planted by an unconventional and free-lance Frenchman named Guillaume Duchenne, who graduated in 1831 as a pupil of Laënnec, Magendie, and Cruveilhier. Adapting to his purposes Oersted's and Faraday's recent discoveries of the induced electric current, he was the founder and popularizer of electrophysiology, electrodiagnosis, and electrotherapy of nervous diseases.

Just ten years after the publication of Duchenne's celebrated memoir on the use of localized faradization for diagnosis and treatment,<sup>1</sup> Charcot became physician to the Salpêtrière and slowly built up the first great neuro-

<sup>1</sup> *De la valeur de l'électricité dans le traitement des maladies*, etc. Gand, 1852.

logical clinic that Medicine has known. There not only were Romberg's and Duchenne's methods further extended, but neuropathology was developed; and there also treatment by hypnotic suggestion was abundantly demonstrated. Though Charcot had little faith in the permanent efficacy of Mesmer's "animal magnetism" as a therapeutic measure, the method nevertheless prepared psychiatrists to accept the principle of substituting ideas in the treatment of psychoneuroses just as that other Vienne product, the phrenology of Gall and Spurzheim, paved the way for neurologists more readily to accept the doctrine of cerebral localization. However this may be, to these flourishing sources, French and German, we may trace the development of both British and American neurology.

Hughlings Jackson, to be sure, was an independent thinker, and so far as I know had never studied on the Continent, but he came early under the influence of a mind no less brilliant than his own in the person of that international rover, Brown-Séquard, who soon after the opening (1859) of the National Hospital for the Paralyzed and Epileptic in Queen Square induced Jackson (at that time "visitor to out-patients in their homes") to devote himself to the diseases of the nervous system. Jackson's great powers of generalization led him to conceive the idea that discharges from the cerebral convolutions develop movements, and this was amply supported by David Ferrier's early experiments (1873), carried out in conjunction with James Crichton Browne at the West Riding Lunatic Asylum. Thus it came about that for many years the problems of cerebral localization were largely to engross the highly gifted school of British neurology, both clinical and experimental.

So, through the past century and on into this, the



dominating influences on neurology in our two countries have emanated from the schools of Romberg in Berlin, of Charcot in Paris, and of Hughlings Jackson in London. There was once promise, to be sure, of an independent school in the United States, when, during the Civil War, Weir Mitchell, with Morehouse and Keen as his associates, was put in charge of certain wards for neurological cases at the military hospital in Turner's Lane, Philadelphia.

To this particular duty Mitchell, who was then in his early thirties, bent his highly original mind, and throughout his long professional life an interest in mental and nervous diseases was paramount. He had had no previous training in the subject, and this was possibly to his advantage, for he pursued his own wholly independent lines of thought. During his short year of study abroad (1850), the only person that appears to have influenced him was Claude Bernard, who imbued him with an interest in experimental investigation. The nature of his early researches is thus explained, as is also his yearning to be recognized as a neurophysiologist.

Mitchell's informal clinics at the Orthopædic Hospital and Infirmary for Nervous Diseases in Philadelphia were widely attended; and, had the luck of academic preferment fallen to his lot, a purely American school of neurology immediately contemporaneous with that of Charcot might well enough have come into being. Even so, though he became perhaps better known as poet and novelist, his common-sense treatment of the psychoneuroses which he had worked out for himself had in its day a far-reaching influence.

Why neurology should have been so long, both here and abroad, in attaining professorial recognition is difficult to understand. Even in Philadelphia, the home of Ben-

jamin Rush, it was not until 1903 that the late Charles K. Mills was given such a chair, he having for ten years previously been Professor of Mental Diseases and Medical Jurisprudence. When academic posts were thus combined, it was more usual for psychiatry and neurology to go together. Thus, in New York, Edward C. Seguin became Professor of the Diseases of the Mind and Nervous System in 1874, this title descending to his successor, M. Allen Starr; and not until 1915 was Frederick Tilney appointed Professor of Neurology at Columbia. It was very much the same in Boston, where James J. Putnam, in 1893, was made Professor of the Diseases of the Nervous System, and E. E. Southard, in 1909, Professor of Neuro-pathology; whereas not until 1917 was E. W. Taylor, as Putnam's successor, the first to hold the title of Professor of Neurology. Other American schools presumably would have much the same story to tell. In Great Britain, so far as I know, there has never been a professorship of neurology until the recent establishment of such a chair in Dublin. And the position in which neurology finds itself on the European Continent, as far as one can judge, is but little better.<sup>1</sup> Particularly in Germany and Austria it has

<sup>1</sup> From the 1928 edition of *Minerva*, one learns that there were at that time among *ca.* 86 European universities 50 chairs in which Psychiatry and Neurology were variously combined (Psychiatry and Neurology, 19; Neurology and Psychiatry, 25; Psychiatry and Neuropathology, 6), 40 of Psychiatry alone, and only 19 of Neurology alone. While it may be splitting hairs to distinguish between chairs of "nervous diseases" and those of the more modern-sounding "neurology," only 5 of the 19 professorships have this latter designation (*viz.*, at Breslau, Hamburg, Lisbon, Strasbourg, and Tartu), whereas the other 14 (*viz.*, Irkutsk, Kazan, Leningrad, Lille, Moscow, Odessa, Oslo, Paris, Perm, Saratov, Smolensk, Sofia, Stockholm, and Warsaw) are called chairs of nervous diseases. It will be observed that 8 of the latter — almost half of the entire number — are in the newly organized schools in Russia.



been taken over by psychiatrists or has remained largely in the hands of internists, many of whom, to be sure (for instance, Romberg, Friedreich, Erb, Schultze, Leyden, Kussmaul, Lichtheim, Strümpell, and Nothnagel), have made notable contributions to the subject and might possibly have done still more could they have devoted themselves to it exclusively.

So, while in many places for a hundred years or more psychiatry had attained the dignity of an independent specialty, it was scarcely true of neurology till the turn of the present century. It is easily understood how this came about and how it was that physicians had begun to find themselves in deep water keeping up with all the many discoveries which novel methods of histological and physiological technique were everywhere making possible.

Neurology's most notable era began with Waller's studies of degeneration and culminated in Waldeyer's enunciation of the much disputed neurone doctrine, which came finally to be settled — or as nearly settled as such things ever are — by Ross Harrison's brilliant experiments. The names are many and long to be remembered: Burdach, Stilling, and Schroeder van der Kolk; Ranvier, Meynert, and Retzius; Lenhossék, Kölliker, and Flechsig; Hitzig, Ferrier, Munk, and Goltz; Golgi, Weigert, and Ramon y Cajal; His, Forel, and Waldeyer; Monakow, Marchi, and Edinger; Nissl, Alzheimer, and Bielschowsky; Dejerine, Henschen, van Gehuchten, and Obersteiner; Gaskell, Langley, Head, and Sherrington — to mention by no means all those whose work was making it possible in the last quarter of the century to unravel the clinical syndromes of previously unknown organic diseases of the nervous system.

The detection at the bedside of the newly disclosed



physical signs of all these disorders became such a special art it could only be practised by someone who had actually grown up in the business. It came to be largely a question of expert diagnosis for diseases, many of them degenerative in character and for which, alas, there was no specific treatment other than that which any doctor might prescribe or apply — bromides for epilepsy, electrotherapeutics and exercises for neuromuscular paralyses, iodides and mercury for anything suspected of being luetic in origin. And while the ranging mind of the neurologist has often led him to anticipate others in taking up interesting new bypaths of Medicine, all too often he has relinquished his leadership when it came to a matter of therapy.

Neurosyphilis has passed out of his hands since the introduction of the Wassermann reaction and of salvarsan; infectious meningitis likewise on the discovery of a serum. His hold on poliomyelitis has weakened since the orthopædists and physiotherapeutists have developed new methods of muscle training and of correcting paralytic deformities. He was the first to take an interest in the hyperfunctioning disorders of the ductless glands, many of which have pronounced psychopathological features, only to have the endocrinologist enter in to develop the complicated subject in his peculiar way. He was likewise the first to recognize and describe infectious encephalitis and its shocking sequelæ, for which, alas, there is little that one can do. So also was the neurologist the first clinically to recognize and localize tumors of the brain and to encourage surgeons to attack them, with the wholly unexpected result that, Janus-faced, they promptly usurped the field.

In these many ways the practising neurologist, finding his activities encroached upon in several directions, tends

more and more to turn to psychotherapy for his livelihood. Just what this will lead to one cannot foresee, but Medicine has always been like this, with ever-changing realignments. There must be some fundamental, underlying principle constantly at work, and I suspect it has much to do with those native qualities that distinguish thinkers from doers — qualities that determine why one chooses to solve his problems in his study, like psychiatrists, we may say, while another, like the surgeon or laboratory worker, instinctively prefers somehow to work them out with his hands.

It is commonly assumed that the surgeon is only interested in operating, and therefore the diagnosis of the malady and the after-care of the patient should be left to others. As a matter of fact, in view of the dangerous form of therapy in which he engages, no one should be a better diagnostician than he, and no one should be better able to use every resource, whether psychotherapeutic or otherwise, to supplement the operation during his patient's convalescence. Speaking more particularly for the neurosurgeons, I know of no group of clinicians who have more arduously studied their problems and who have pursued the end results of treatment with greater fidelity and over longer periods of time than they have done.

Modern psychiatrists seem to be unaware that others are also cognizant of the psychogenic aspects of their patients' disorders, and often have effective and common-sense methods of dealing with these problems. Every good physician worthy the name treats his patient from a "psychobiological" standpoint — as a person rather than as a case; otherwise he wouldn't long be employed. Psychoanalysis, Adolf Meyer tells us, should be limited "to the specially talented physician and to well-chosen

patients"; but this might be said of almost any doctor-patient relationship, and the trouble is that a charlatan is certain to regard himself as "specially talented," and, given the opportunity, is eager to prove it.

### THE NEUROSURGEON

Departmental boundaries in Medicine fortunately are not fixtures and no plebiscite can keep them so. It is inevitable that in the passage of time they should be made and remade, crossed and recrossed. It may well enough happen that the neurologist of the future will be largely surgeon. Nor does this mean that the invasion will come only from the surgical side, for there are notable examples of neurologists who even in middle life have taken up neurosurgery and have proved themselves capable of operative work of the highest order.

While neurosurgical specialization has been a development of recent years and is largely of American origin, we need not forget that in all countries there have been courageous pathfinders. And since deliberate intracranial surgery before Lister was something unknown, the pioneers like Macewen of Glasgow, Horsley of London, Krause of Berlin, Chipault of Paris, and Keen of Philadelphia have been necessarily men of our own time, personally known to many of us. Although their technique from a present-day standpoint was crude, nevertheless Horsley's removal, for Gowers in 1888, of the first intraspinal tumor, Macewen's courageous interventions for cerebral abscess, Krause's early operations for trigeminal neuralgia, Durante's and Keen's successful extirpations for the first time of large meningoblastomas, pointed the way for others to follow.



Like beacons on an unfamiliar coast, they stand as isolated figures, no one of them having left what might be called a neurosurgical school, for which the time was not yet ripe. Whereas neurologists in their day, with a few exceptions, were deterred from recommending operation by the high mortality and the ugly wounds of those who recovered, the general practitioner and the layman, though becoming accustomed to the idea of abdominal operations, regarded an exploration of the brain as nothing less than a death warrant.

In a short quarter of a century all this has been surprisingly transformed. Practitioners and their patients, instead of holding back, now beseech the harassed neurosurgeon often to do the impossible. This change of attitude has been due to two things. One of them was Broca's idea of decompressing the brain for supposedly irremovable tumors, so that their victims could at least be freed from headache and have their vision spared. The other was the gradual development of a new and painstaking operative technique to replace the old rough-and-ready procedures, so that the horrors of fungating and leaking cerebral wounds, now practically unknown to the younger generation of surgeons, were no longer complications to be dreaded.

It has recently been stated by a distinguished British surgeon that surgical technique has reached its apogee, but he is just as certain to be wrong as were the many persons who have said the same thing in times gone by. The surgery of the nervous system, rapid as its progress has been during the past twenty years, has only reached the threshold of what lies before it. The technical details of intracranial procedures are so far from being fully perfected that scarcely a season goes by without some new

and important element being introduced in the operative ritual which makes possible the exposure and treatment of lesions only yesterday thought to be forever out of reach. I am, of course, speaking principally of operations for intracranial tumors on which the attention of many has been focused; and while this perhaps is the most difficult and trying part of a neurosurgeon's work, I need scarcely remind you that it is far from comprising all there is to neurosurgery.

Twenty years ago, Charles L. Dana gave a notable address on "The Future of Neurology,"<sup>1</sup> in which he said: —

It seems to me that neurology will, to a degree and for a time, divide up into specialties of its own. There will be neurologists who are especially students of organic neurology; there will be functional neurologists, psycho-therapeutic and psycho-analytic, electro-therapeutic, epileptic, glandular, neuroserological, and laboratory neurologists. But the definite fruit of their special work will become systematized and absorbed in time by the general neurologist, who will come into his own as master of that highest branch of medical art which deals with the master-tissue of the human body.

This prophecy I believe will prove true, but that neurosurgery was soon to be added to the subdivisions of neurology was unforeseen even by so clear-sighted a man as Dr. Dana. Yet in the two intervening decades this new and rapidly expanding subject has budded off from general surgery and ardently attached itself to neurology. For better or for worse, it is something that must be reckoned with and properly guided. With the characteristics of youth it may be bumptious, self-confident, and

<sup>1</sup> *Journal of Nervous and Mental Diseases*, 1913, XL, 753.

inclined in spite of admonitions to find out things for itself — but these are faults time will cure.

That a surgeon should be admitted to membership in the Association of Physicians is something unheard of, and it speaks well for the broad-mindedness and generosity of neurologists that neurosurgeons in increasing number, as soon as they have made their mark, have been taken into their societies on an equal footing. Meanwhile, neurosurgeons have formed their own special societies that not only have done much to raise the level, through imitation, of their individual craftsmanship, but at the same time have served to broaden their views of neurology as a major discipline. Membership in these societies is not restricted to practising surgeons, but has been opened to neurophysiologists, anatomists, and pathologists, and the meetings vie in general interest and activity with those of the older societies of neurologists and psychiatrists. The existence of a specialty is justified only so long as it makes such rapid progress that the larger group from which it has split off cannot keep pace with it. So soon as it ceases thus to keep in the van, it will be quickly overtaken and become once more reabsorbed in the parent group. And whether internal Medicine will once again take over neurology, and general surgery the neurosurgeon's work, will depend entirely upon our ability to keep ahead of what the internist and the general surgeon can easily absorb.

Sir William Gowers, one-time Professor of Clinical Medicine at University College, once said, "A neurologist must be a specialist, but he cannot be an exclusivist," his meaning, I suppose, being that he must not lose entire contact with general Medicine. It goes without saying that a neurologist should first of all be a good physician; also



that a neurosurgeon would be the better were he primarily well trained as a neurologist. If we grant these premises, the neurosurgeon should first have a general medical training, followed by experience in general surgery before he begins to take up his specialty. How far he will go into neuropathology, neuropsychiatry, and experimental neurophysiology while studying to prepare himself in neurology will necessarily depend on his opportunities and ambition to round out his training. If he is to make his own diagnoses — and should he not do so he will miss the chief intellectual interest in his work — he must be a good practical ophthalmologist, otologist, and endocrinologist. On top of all this, he must become proficient in the peculiarly detailed ritual of intracranial operations in which comparatively few can ever hope really to excel.

You may well say that's a long preparation for an uncertain reward — certainly five or six years after graduation. Yet it's a course being pursued by more people than you would suppose. Out of this a neurologist of a new order may emerge, and while he need not necessarily spend his life at the grueling business of operating, he at least has learned what surgery can accomplish and so knows better when and for what to advocate it. Nor will he then look upon surgery as a form of therapy to be prescribed and directed, but will regard his neurosurgical colleague as a co-equal. Such a training, if I understand the purposes of this institution, it will now be possible for aspiring neurologists to get at McGill.

But in the last analysis this will depend, not upon the well-equipped edifice we are here to dedicate, but on those who are to control its activities. There has recently been erected at Yale a massive neo-Gothic structure with a cathedral-like entrance — the new Sterling Library, which

people come from a distance to admire. It is told that the librarian, apprehensive of the impression visitors might carry away, requested that an inscription be carved over the portal something to this effect: "What you see before you is not the Yale library — the Yale library is inside."

So the measure of this fine Institute will not be what one can outwardly grasp of its carefully planned body, for that is a mere matter of morphology — of its soma. The real measure will lie in its psyche, the intangible spirit of the laborers within; and for this, as we have seen, there is no standard yardstick. History has repeatedly shown that an institutional *esprit*, however widely spread throughout a group, is primarily distilled from the ventricles of one of them. So we may well expect that, under the widely trained and many-sided director of this new Institute, neurology will receive a new impetus, making of this place still another Mecca for workers in the great subject in which we all feel so vitally interested. We may rest assured that here not only will the story of neurology's great past be cherished, but a new and significant chapter will be added to it.





## BIOGRAPHICAL SKETCHES

## WILLIAM HENRY WELCH

To have stepped, in the prime of life, into a position of acknowledged intellectual leadership in the profession of his choice; to have occupied that position, albeit unconsciously, for those forty years which have seen the most rapid strides in medical progress of all time; to have had such influence in the furtherance of the medical sciences in this country as to turn the tide of students seeking opportunities for higher education from the Old World to the New; to have been as ready in countless unrecorded ways to share his time and thought with those who were inconspicuous as with those who sat in high places; to have been no less universally respected for his great learning than beloved for his personal charm and companionability; to have stood knee-deep in honours unsought and to have remained seemingly unaware of them; to have rounded out with distinction two successive university positions and, with enthusiasm undimmed, to be now well launched on a third which he is no less certain to adorn —

To have done so much, in so many ways, for so many years, and to have aroused no shadow of envy or enmity on the way, betokens not only unselfishness of purpose but that fineness of character which always has been and always will be an inspiration to mankind.

*Published anonymously in "The Eightieth Birthday of William Henry Welch," New York, 1930.*

## VIII

### THE DOCTORS WELCH OF NORFOLK

Over the river, on the hill,  
Lieth a village, white and still.  
All around it the forest trees  
Shiver and whisper in the breeze.  
Over it sailing shadows go,  
Of soaring hawk and screaming crow;  
And mountain grasses, low and sweet,  
Grow in the middle of every street.

OVER the northerly part of Litchfield County in Connecticut sprawl the rugged and heavily wooded foothills of the Berkshires, and in early May they are possibly even more lovely than when the first frosts of late September have suddenly turned to crimson the swamp maples of their lower valleys. But, whatever the time of year, no part of Litchfield County is more quietly satisfying than the township of Norfolk, which must have changed scarcely at all since Hopestill Welch decided to settle there one hundred and sixty-two years ago.

If the beauty of the countryside is thus felt by the casual visitor, how much more deeply must those feel who, born and bred in Norfolk village, have roamed the neighboring hills, fished the streams, and swum the ponds in boyhood days. And so the great-grandson of this Hopestill Welch, though in the course of his eighty-four years he had wandered far and attained world renown, never

*From the "New England Journal of Medicine," May 24, 1934.*



lost his affection for the place of his birth and requested that it also be his place of burial just as it had been of his medical forbears.

Norfolk village, having been protected against the vandalism of modern days, has lost none of its old-time charm. Many of the villagers who have moved away and prospered have regularly returned to pass the summer on some of the nearby hillsides, but the village itself has changed but little. Loving hands have kept it trim and neat. The village green with its magnificent trees, its typical New England meetinghouse and town hall, is the same as always; and so too is the original village "buryal-yard" laid out in 1757 as God's Acre.

Behind a low stone wall just beyond the last of the houses on the road to Canaan it lies, inconspicuous to passers-by, on the lower slope of Haystack Mountain, where it borders on the brook. In the shadow and solitude of great trees the headstones are scattered in groups as though they had accidentally grown there. No gravel walks, no artificial planting and regimented narrow plots, have been needed here, though the original acre has been considerably extended.

Whatever may have happened to the many from Norfolk who joined in the great migration to the New Northwest — as did ten of Hopestill Welch's thirteen children — one gets the feeling that those who stayed behind must have lived to a great age, else there would by this time be more crowding in this one hundred and sixty square perches of land. Norfolkians, while not boastful, have good reason to take pride in the proverbial longevity of their people, which is not surpassed or equaled by any other community in New England. In the space of two years not so very long ago, six persons died there whose average age was over ninety-three. Compared to this the

Welches, as we shall see, mostly died young — in their early eighties; and it was a family tradition that they would be likely to keep going in perfect health just that long and no longer.

On this particular May fourth of 1934, with the countryside glistening after a warm spring rain, the early afternoon sun struck across the hillside, lighting up the feathery pink blossoms of the maples, the delicate early green of willows and birch; and the tufted white blossoms of an occasional shadbush, set off against the dark hemlocks and the brilliant green of the spring turf, made it clear that the season had come to cast for speckled trout.

There is a touch of sadness and melancholy about autumn, which would seem the more natural time of year for an old man to die. But, so far as anyone could ever tell, sadness and melancholy were moods of which he was incapable, and it was as though he whose youthful spirit and reactions so belied his years had deliberately waited for spring — waited at least as long as he could, for the season has been delayed by the hard winter and the venerable elms have not as yet burst their winter buds.

One such giant has come almost to envelop in protecting embrace the headstone of a certain Jerusha P. —, who had been buried at its feet, evidently the wife of Captain John Porter, who in 1793 came to be placed beside her. Another aged tree of the same kind once shaded the nearby knoll marked by a modest brownstone shaft where lie the Welches, and where a new grave has just been dug to hold the ashes of still another of them.

A few people had gathered at the knoll — his relatives and three or four others. Appropriate verses from Ecclesiasticus were read by the local clergyman and followed by a simple prayer. Then two of his great-nephews, who

were at the same time his namesakes, lowered the casket into its place. That was all — except for one incident.

In the small gathering was a frail little old lady whose many wrinkles could not conceal that she must once have been beautiful. She arose with some difficulty from the camp chair that had been provided for her and, refusing aid, walked over to where lay a spray of red roses she had brought, and, lifting them, she placed them with her own hands beside the grave. Then, turning away, she said as to herself, "I shall now go." Only six months younger she was than this friend of her childhood; they had long ago been playmates — perhaps, on her part, something more than that.

It was the same little old lady who four years before had been taken in a wheel chair all the way to Washington so that she might hear in Continental Hall what the President of the United States and other notables would have to say about her lifelong friend; and also what in return he would have to say for himself on that day when speeches in honor of his eightieth birthday were broadcast to all quarters of this country and abroad.

While this public celebration, with its spontaneous outburst of affection, was in its way a sort of canonization, honors had been heaped upon this particular Doctor Welch throughout his life. He could not avoid them without being ungracious, — and this he never was, — but they left him unchanged in his simplicity. He always behaved on these occasions as though he were merely representing someone else — someone else who deserved the honor and for whom it was really intended.

It had been urged that the National Cemetery at Arlington was the proper place for him to lie, in view of his distinguished service during the War. He had merely



volunteered on an April day in 1917 to help his friend the Surgeon-General to open his rapidly overwhelming mail; and the close of the War found him still there — much to his surprise and somewhat to his amusement — a brigadier-general. But a military funeral, with gun carriage, firing squad, the last post and all that, just because he had done his duty as he saw it, would have been incongruous and unsuited to his real character and life, public though much of it had come unsought to be. It was wholly consistent and typical of him that he should choose to rest where to the future passer-by he would be just another of the many Doctors Welch of Norfolk.

Even now, should you happen to ask the aged apothecary in the village which of the Doctors Welch was the more celebrated, he would certainly say William Wickham, the father of this William Henry. And should you venture to demur, knowing that William Wickham, weary of compounding his own drugs, had set him up in business some fifty and more years ago, he would be likely to reply: —

“If you don’t believe me, just ask any middle-aged person you may chance to meet up with for thirty miles around and see if they don’t agree. Most of ’em will remember when they used to put a light in the window for him should he happen by in the dead of night. He was never known to send out any bills — pretended to forget that people owed him money, and those who paid had to press it on him. There’s his house just down the street — as it was when at the end of his seventy-four years he left it to his successor — a good man, too, though he could not stand the wear and tear so long as if he’d been a placid and good-humored Welch.

“It was in that house his son Willie was born, and

there's a tablet on it saying as much; but if you think the drinking fountain in front, for thirsty horses coming up the hill, was put there in memory of your friend rather than for William Wickham, his father, you make a great mistake. If you haven't forgotten your Latin, just go and read the inscription cut around its rim.

"And you will find just off the road the little house in which *his* father, Dr. Benjamin Senior, lived until he died at eighty-two, beloved like all the rest of them. It was his second wife, Elizabeth Loveland, a beautiful woman, who lived to be eighty and was everybody's friend and known to every Sabbath-School boy in the town as 'Grandma Welch' — it was she who brought up the Dr. Welch you've just seen buried today, for his mother died when he was barely six months old.

"William Wickham wasn't the only one of old Dr. Benjamin's sons who took up medicine; there were four others who spent their lives within thirty miles of here — all men of the same kind, and they are all buried together in the Acre. Asa was the eldest. He first started out in Tyringham, but was invited to settle in Lee, where he practised until his death. He was interested in public affairs, — as indeed they all were, for that matter, — though he was the only one who happened to be sent to the State Senate. Benjamin Junior was the next. He got his M.D. at Yale in 1823 and was in active practice for fifty-four years — first here for a time, then at Litchfield, and finally at Salisbury. He became celebrated as a surgeon, and there was a common saying hereabouts: 'Don't give up hope before you've sent for Dr. Benjamin.'

"James was the third son. He got his degree at the old Berkshire School in 1830 and settled at Winsted, where he built up a large practice in which he was active

till he reached eighty; and what's more, at least three of *his* sons became doctors. Then came William Wickham — the best of them all, to my thinking. And after him the fifth and youngest was John Hopestill, who also graduated at the Pittsfield School in 1848 and then practised in Salisbury, in Cornwall, and in Norfolk till 1871, when he moved to Hartford, where he finally drifted out of medicine into a manufacturing business."

So it would seem there must have been at least ten doctors in these three generations, all apparently men of very similar type, good judges of people and good public servants, men able to instill confidence and win regard, all of them blessed with a rare capacity to gain and retain friendships with young and old, all of them apparently men who were respected, admired, and beloved. And then, to follow the old apothecary's advice, you go down the road and find cut on the rim of the fountain erected in memory of your friend's father — the last of the Doctors Welch to pass his life wholly in Norfolk — what might be no less appropriate to William Henry, his son: —

FONS SUM SOLATI TALIS ET IPSE FUIT



## IX

### WILLIAM BEAUMONT'S RENDEZVOUS WITH FAME

THERE migrated from England in 1635, to settle five years later at Saybrook, in John Winthrop's new colony, a certain William Beaumont of Huguenot descent. His grandson of the same name left Saybrook a century later and moved to what was known as "The Purchase," a parcel of land bought by four proprietors from Owaneco, son of Uncas, first Sachem of the Mohicans.

Included in this purchase was the present town of Lebanon, at whose historic village center — known as "Town-street" and scarcely altered by the passage of time — we are now assembled. And near here, just one hundred and fifty years ago, this second William's grandson, yet another William Beaumont, was born in the farmhouse still standing on Village-hill, a short distance off the road that runs in the direction of Willimantic from the northern point of the generous "Commons," which "Town-street" splits to enclose.

Thus five generations of Beaumonts appear in minor parts on the Connecticut scene, marry, beget children, and are gone, leaving little behind them other than the bare record of their separate entrances and exits. They were doubtless rugged, devout, and law-abiding people

*Address given in Lebanon, Connecticut, June 1, 1935, at the dedication of the Beaumont Memorial Highway in connection with the Tercentennial Celebration of the first settlement in Connecticut. Reprinted from the "Yale Journal of Biology and Medicine," December 1935.*

who differed no whit from many others who managed in colonial days to harvest a precarious sustenance from the hillsides and from between the boulders that stud Connecticut's glacial soil.

The peculiar disposition of the heavenly planets as seen from Village-hill on the twenty-first of November, 1785, when (as the third child in a family of nine) the last of these William Beaumonts came into the world, is unrecorded; but, whatever it may have been, he was destined for a more picturesque rôle than that played on the Connecticut stage by his forbears. To be sure, his father and four uncles had seen active service in the Revolutionary War, and in all probability a flintlock and powderhorn hanging over the open hearth of the farmhouse had been a childhood memory. Indeed, for the duration of the war the commissary department of the army had been located here in Lebanon's "War Office," and for many months Rochambeau's mounted hussars, while encamped along the old Boston to New York post road leading from this point toward Colchester, had frequently held parades or manœuvres on the expansive village green.

All this, by a scant margin, Beaumont just managed to miss, though the traces of war were many and tales of it were doubtless of the sort to kindle his youthful emulation. He once challenged his boyhood playmates to see who would dare stand nearest to the loaded cannon about to be discharged — let us imagine at a Fourth of July celebration staged on the Commons in 1795, likely enough before the homestead of Washington's "Brother Jonathan," the patriot Governor. Save for a probable New England spanking and a pair of damaged eardrums that left him hard of hearing, the consequences of this escapade were negligible.

Something, in contrast, that proved in course of time to be of major consequence to him was the discharge of a mere shotgun that was destined to echo round the scientific world. Small chance that Beaumont or anyone from the peaceful bailiwick of Lebanon would be at all concerned with this particular incident, for the shot was to be fired many years later in a trader's store on an insignificant island of a distant frontier bearing the impossible name of Michilimackinac — up to that particular moment scarcely known save to a scattering of fur traders, trappers, and Indians.

The first half of Beaumont's life was passed in the unconscious preparation for what in his absence would have been a trifling and soon forgotten episode; the later half in patiently taking advantage of its occurrence in an effort to shed light for the first time on what previously had been beyond human understanding — how food comes to be digested in the stomach. Could some local soothsayer have undertaken to cast the newborn infant's horoscope and have predicted for a certain June morning in 1822 this distant rendezvous with an illiterate French-Canadian *voyageur* wounded to the point of death, it would have appeared to the Beaumont clan, for long deeply rooted in this section of colonial Connecticut, so out of keeping with their experience and traditions as to be beyond reason fantastic.

Were this forecast to be fulfilled, the unsuspecting child, grown to manhood, must prepare himself for something quite different than to follow the paternal footsteps along the boulder-strewn furrows of the Lebanon farm. He must learn to endure hardship and fatigue; to make his mark among strangers; to adapt himself to a rough-and-ready life on the fringe of civilization. He must be-



come familiar with the treatment of wounds, learn to be resourceful in emergencies, and acquire an independence of others in thought and action. For he was destined to blaze a trail beyond the frontier of knowledge; and this would demand the same qualities of patience, endurance, foresight, and self-sacrifice that enable any pioneer, whatever the discouragements, to push forward ahead of his contemporaries into the wilderness of the unknown.

During the years when Beaumont was growing to manhood, most of his young contemporaries with any spirit must have been itching to join in the annual exodus of Connecticut families that each summer in mounting numbers were taking the long trail in covered wagons across central New York to the promised lands set apart for them in the newly demarcated "Northwest Territory."

By November of 1806, when he came of age, not only was this remarkable migration toward the Western Reserve well under way, but he was in possession of one hundred dollars of hard-earned savings with which a tidy piece of property at some fifty cents an acre might have been purchased from the Connecticut Land Company. But farming did not appeal to him, nor was this the preordained program; and instead of waiting for the coming spring to join in this westerly procession, having received his father's benediction, he struck off independently toward the north all by himself.

Winter must already have closed down on these hills, for he set forth on his journey in a horse-drawn cutter which also carried a barrel of home-made cider. This, to be sure, was something not wholly unfamiliar to the dwellers of Lebanon, for some fifty years before one Eleazar Wheelock had left the township, also in a northerly direction — he, however, in a wheeled "chariot" which was

followed by the five hundred gallons of rum since celebrated at Hanover in song; but that is quite another story. Beaumont felt no pious urge to evangelize the heathen redskins, of whom he was to see more than he wanted in the years to come.

Over the snows of Connecticut and Massachusetts in slow stages his way was made toward western Vermont, and by the end of the winter, having nearly reached the Canadian border, he crossed over into New York State and settled down for a time to recoup his resources in the village of Champlain. There he remained for the next five years teaching school, tending store, and meanwhile saving from his slim earnings enough to pay a capable doctor in St. Albans, Vermont, who had befriended him, the customary fee for a two-year apprenticeship as his pupil.

So far, albeit unconsciously, he had been preparing himself for what was presaged. He had shown independence of action, had found his way to the northern frontier, had studied medicine, and finally, in June of 1812, had been granted, by the medical society of the district, a licence to practise. The only thing he had omitted was to prepare himself in methods of experimental research; but where could any such preparation then be had? Twenty years later he was to find that even then the most eminent of contemporary physiologists and chemists could give him little help with his self-imposed problem.

Northern Vermont was still a far cry from the isolated spot where he was destined to be on call after another ten years' interval; but a way to arrive there most easily and certainly was now unexpectedly and providentially laid open. During his sojourn in Champlain, the border rumblings of a coming storm were year by year growing more ominous; and a short three months after he had secured

his licence there came a declaration of war with England that found him in a locality where military activity seemed inevitable and where invaluable experience in the treatment of gunshot wounds might in all probability be acquired.

Across the lake at Plattsburg a portion of General Dearborn's army was already encamped, and making his way there he volunteered to sign up as a surgeon's mate, a formal commission bearing the name of James Madison and forwarded from Washington ere long being safely in his pocket.

Marking time, as many have learned to their discomposure, constitutes a not inconsiderable portion of army service, and while awaiting his movement orders Beaumont stayed on at Plattsburg, meanwhile making contacts that were to be helpful to him in later years. He, indeed, at one time was on the point of resigning his commission on the advice of his former preceptor, who was opposed to his entering the army and bluntly advised him to show some common sense by settling down and starting to build up a practice. It, however, was otherwise ordained; and when, in the early spring, peremptory orders were issued for the troops to proceed with all possible dispatch to Sacketts Harbor, his temporary indecision was promptly overcome.

During the two years of border warfare that followed, he saw active service, became familiar with the treatment of battle casualties and camp diseases, and finally in September of 1814, after taking part in the decisive Battle of Plattsburg, partly fought in the very streets of the village, he was officially commended for bravery in caring for the wounded under the enemy's fire. He remained in service until the Treaty of Ghent was ratified five



months later, when he resigned with the determination to hang up his shingle in Plattsburg as he had once before been tempted to do.

Accordingly, he opened an office, became an active member of the local medical society, soon built up a thriving practice, took his cousin, Samuel Beaumont, on as an apprentice, and ere long became engaged to be married to a charming widow by the name of Deborah Green, the daughter of a highly respected member of the community. Thus three quiet years passed by, and it would appear that the prospect of his keeping that prophesied engagement with Alexis St. Martin on a far-away island of northern Lake Michigan in June of 1822 was growing distinctly dim.

It is said that, once cultivated, a taste for army life is never lost; and at this juncture, in 1818, Dr. Joseph Lovell, under whose favorable notice Beaumont had come during the war, was appointed by President Monroe to be Surgeon-General. Being the first incumbent of this position, he promptly set about reorganizing the medical corps, and succeeded in making it so attractive that Beaumont applied for reinstatement in the service, and in March of 1820 he was not only recommissioned but ordered promptly to report to General Macomb for duty at Fort Mackinac. There two months later he officially assumed charge of the small, one-room frame building that constituted the post hospital.

Thus, with an abrupt shift of scene, the stage at last is being set; and as it was decreed that Beaumont was to save St. Martin by taking him into his own home, provision must now be made for that. So, having secured temporary leave of absence, he returned to Plattsburg in the following year, married his beloved Deborah, and

brought her back to set up housekeeping in the old stone building where the officers of the post had their quarters.

For my own part, having passed a succession of boyhood summers encamped on an island near the mouth of the Sault Sainte Marie, from which Mackinac was within easy sailing distance, a sentimental attachment to that section of the country was youthfully and permanently acquired. Even in those days we would occasionally stumble upon the ruins of the old palisaded forts that once dotted the frontier, mostly British in the region familiar to us, as could be told by the military units still faintly legible under the soldiers' names on the weather-worn oak markers, rotting and tumbled about in the almost obliterated places of burial adjacent to the site of the ruined block-houses.

In spite of these treasured memories, it would take a braver pen than mine to attempt newly to tell what so often has been told before — the romantic story of Mackinac and the legends of the Middle-West border, with its colorful pageant in which French *voyageurs*, English soldiers, Spanish explorers, American Indians, missionaries, trappers, prospectors for gold, silver, or lead, traders, soldiers, and settlers, all are kaleidoscopically commingled.

One would have to go back too long a way for such an occasion as this; and it must suffice to recall that in 1812 Mackinac had become the main distributing center for that vision of John Jacob Astor's — an American fur company that would outrival the long celebrated English company of the Hudson Bay. The British and their Indian allies, led by the famous chief Black Hawk, had easily overcome the small garrison in the early months of the war and taken the island with its magnificent beach for their own. But it was now again in American hands,

and Beaumont found its palisaded fort rebuilt, its Indian agency and the trading station of the fur company reëstablished and in full operation.

In the two preceding summers he must already have seen the small fixed population of military post and adjacent village swell nigh a hundredfold from the influx of Indians, half-breeds, trappers, and *voyageurs*, bringing in their winter's collection of pelts with which to barter at the company's retail trading post. It was in this crowded store, on the morning of June 6, that a hitherto unknown Canadian *habitant*, in the employ of the fur company, received into his body the full charge of a shotgun, accidentally fired at close range. It dropped him supposedly dead.

The foreshadowed moment of which we have long been in expectation has arrived, though its portent was unknown to Beaumont, who, hastily summoned, elbowed his way through the gaping crowd a few moments later to do a doctor's part in an emergency. On a cursory examination he found — to use his own words — that a portion of the lung as large as a turkey's egg was protruding through the external wound, while below this was another protrusion resembling a portion of the stomach. This at first he could scarcely believe possible with the man surviving; but on closer examination it was found actually to be the stomach, with a hole in it large enough to receive his forefinger and through which food that had recently been taken was extruding. In this dilemma he considered any attempt to save life entirely useless.

It was indeed a dilemma, and though the man could scarcely be expected to survive, Beaumont did what he could to render first aid and to provide a temporary covering for the ugly wound. Before the protruding lung



could be reduced, he was obliged to cut off with his pen-knife the point of a fractured rib on which it was caught, and even then it was necessary to hold the lung in place by pressure, lest it immediately be forced out by coughing.

A protective dressing was finally applied and the patient removed to the wooden shack which constituted the post hospital. There an hour later a more thorough examination of the wound was made, with the removal so far as possible of the clothing, wad, charge of shot, and broken ribs, which had been driven deeply into the burned and lacerated tissues. All this was stoically endured by the husky young Canadian, a lad about nineteen years of age whose *patois* was so difficult to understand that "Alex Samata" was as near as one could come to the spelling of his name.

Day after day and month after month, for the better part of a year, Beaumont clung persistently to the difficult surgical problem offered by this unfortunate youth, dressing the formidable and leaking wound at frequent intervals, opening successive abscesses, removing fragments of indriven cartilage or bone, as the region began slowly to cicatrize.

So the months passed until April 1823, when a dilemma of quite another kind had to be faced; for the town officials refused further assistance to the destitute youth — become a pauper, far from home and without relatives or friends. Refusing to provide for his care any longer, they insisted on packing him off in an open *bateau* to his native place — an appalling distance by water route for a man in his predicament even had he known the people and their language.

Indignant at this proposal, Beaumont, from mere motives of charity, moved the patient to his own home, where

he nursed, fed, clothed, and lodged him, meanwhile continuing with the daily dressings of his slowly healing but constantly discharging wound. Thus another year and more went by, until Alexis had become sufficiently restored to health to do household chores for the Beaumonts and thus make himself useful.

No surgeon can venture to say whether his skill, judgment, and experience have been the main factors in the recovery from a desperate wound of this nature, or whether it was pure chance, or due to the victim's unusual resistance, or, indeed, was the act of Divine Providence, as Paré devoutly believed. But when one realizes that St. Martin's survival hung in the balance for the first year or more, to Beaumont may deservedly be ascribed the principal share in the miraculous recovery.

But he was far from making any such suggestion when he came modestly to describe the surgical aspects of the case in a clinical report duly forwarded to Washington in the autumn of 1824, with the suggestion that it might deserve publication. This was favorably acted upon, the article appearing in the first issue of the *Medical Recorder* for 1825, by some oversight as "A Case of Wounded Stomach, by Joseph Lovell, Surgeon-General, U.S.A." Had the episode ended here, as it might well enough have done, it would hardly have been worth the telling. The story, however, has only just begun.

In the course of his daily dressings of the wound, Beaumont had observed that when St. Martin lay on his right side, so that the stomach gravitated away from its attachment to the margins of the healing wound, he could "look directly into its cavity and almost see the process of digestion." He also observed that fluids poured in through a funnel could later be recovered by syphonage, and that

morsels of food of different kinds could be suspended within and subsequently withdrawn at varying times to see what had happened to them. He must have hinted at these observations in a letter to the Surgeon-General which accompanied his report of the case, for Lovell in acknowledging it had promised to send him a book that dealt with the subject.

Beaumont meanwhile had conceived the idea of making use of Alexis and his gastric fistula for a thorough study of the digestive process, but, having no facilities whatsoever for research, and there being no one within hundreds of miles with whom he could even discuss the problem, he finally applied to Washington for a transfer to another station more favorable for his purposes. Thus it came about that in June 1825, just three years after the accident had taken place, he was transferred to Fort Niagara, and, having taken St. Martin along as his manservant, he promptly started in with some carefully planned experiments, little thinking that a disappointment — the first of many — was in store for him.

Niagara was not far from Plattsburg, where Mrs. Beaumont, in view of her long absence, had promptly gone to visit her kinsfolk; and, having been granted a short furlough, Beaumont two months later, accompanied by Alexis, went on to join her there. Plattsburg, alas, was within striking distance of St. Martin's boyhood home, and the temptation to visit his native place and to hear again the familiar *patois* of his people was so irresistible that when the first opportunity offered he suddenly absconded, and every effort subsequently to trace him, through the agents who engaged the *voyageurs* in the fur company's employ, proved unavailing.

Broken-hearted over this ingratitude on the part of his



protégé, and with his dream of making a notable contribution to science shattered, Beaumont returned disconsolately to his station at Fort Niagara. From there he sent to the *Medical Recorder* for publication the results of the four experiments he had succeeded in completing before St. Martin's disappearance; and, crude as they were, they made clear that the gastric juice had some inherent solvent powers, thus disproving the prevailing conception of digestion as merely a process of maceration brought about by the heat of the body.

This again might well enough have concluded the story; and had it done so we should have had little reason to gather here today. Beaumont ere long received orders that took him from Fort Niagara back to the frontier of Michigan Territory, now so familiar to him. This time he was sent to Fort Howard at Green Bay, the center of the Indian country, where, under the leadership of Chief Red Bird of the Winnebagoes, some of the local tribes, left in an ugly mood by the treatment they had received from the government, had finally broken loose and gone on the warpath.

Thus another two years dragged by, and Beaumont, busy with an active service, was in process of forgetting his disappointment and chagrin over St. Martin's truancy when suddenly one day, out of a clear sky, word came through from a fur-company agent that the ungrateful Alexis, "poor and miserable beyond description," had been located with a wife and family in the back country some fifty-seven miles distant from Montreal.

Futile efforts were made at this time to induce him to return to his benefactor, but another two years were to pass before this could be accomplished. Beaumont meanwhile had again been transferred, this time to Fort Craw-

ford at Prairie du Chien on the upper waters of the Mississippi; and to this frontier post in August 1829, at great expense, St. Martin with his wife and two children was finally transported, and without loss of time Beaumont enthusiastically began once more to pursue the studies that fully four years before had been so abruptly broken off.

His equipment for the experiments was next to nothing, — a thermometer, a few vials, and a sand bath, — but during the months between December 1829 and April 1831 he managed to make a series of well-controlled observations which, by demonstrating that the solvent properties of the gastric juice were probably due to some chemical agent, served to revolutionize the accepted ideas of how the digestion of food was brought about.

Meanwhile, out of his meager army salary he had supported, fed, and clothed the St. Martins and their growing family of children in addition to paying a generous wage to his temperamental subject for his coöperation in the experiments. Alexis, however, was not only incapable of gratitude, but headstrong; and, having come fully to appreciate how essential he was to the furtherance of Beaumont's investigations, he suddenly announced that he and his family must return to their home.

Having by this time advanced in his studies about as far as he could go unaided, Beaumont had made up his mind to ask for a year's furlough so that he could take St. Martin abroad and seek the aid of some trained chemist who might be able to answer the questions now pressing upon him. He consequently thought best to acquiesce in his protégé's whim, extracting a promise that St. Martin would return when required. Whereupon Alexis, his wife, and their four children, having been fully outfitted for the journey, departed in an open canoe for the long paddle

down the Mississippi to St. Louis, up the Ohio to Marietta, across to Lake Erie, and thence by Lake Ontario and the St. Lawrence to Montreal and their distant abode in Lower Canada.

If recurrence of disappointments breeds contempt, Beaumont was to become only too familiar with them. His request for a furlough was rejected for the good reason that Black Hawk and his reckless braves had now gone on the warpath; and for the next year — what with cholera among the troops and participation in the active Indian campaign — his time in this hostile environment was fully occupied. The insurrection, known as the Black Hawk War, finally was quelled, and with peace restored Beaumont, in August 1832, was given a short furlough, including permission to visit Europe.

Thus it was that, in full expectation of again making contact with St. Martin and taking him to Paris for study, he terminated his three years at Fort Crawford, bade good-bye to his friends at Prairie du Chien, and set out with his family to Plattsburg. There the usually undependable Alexis actually joined him and was persuaded to sign a written agreement, whereby for a stipulated compensation he would act as Beaumont's servant for a year, going with him where he desired and submitting to such observations on his stomach as were likely to serve the purposes of science.

Deciding that the duration of his leave was too short to justify the proposed trip abroad, Beaumont as an alternative determined to go to Washington, where he hoped to familiarize himself with the literature of the subject under investigation, which he had had no opportunity to do before. Meanwhile, Alexis was enlisted for five years as sergeant to a detachment of orderlies in



the War Department, and between December 1832 and March of the following year another long series of experiments was conducted in the course of which Beaumont was led to consider the difficult problems of what constitute taste, hunger, and thirst.

He in some measure preceded Pavlov in showing that the sense of taste is essential to digestion in that it stimulates the flow of gastric juice; and because hunger was allayed by the direct introduction into the stomach of food, he concluded that the sense of hunger must reside there. But when it came to the question of thirst, the reactions of Alexis in this respect may already have become scientifically undependable, for he insisted that his desire for whiskey was not in the least allayed by its introduction through his fistula, but only when taken by mouth.

The leading American physiologist of the day was the celebrated Robley Dunglison, of the University of Virginia, with whom Beaumont soon established contact and to whom he sent specimens of gastric juice for analysis; but Dunglison, while fertile in suggesting lines of study, was unable to determine to what the solvent properties of the fluid were due, and finally made the discouraging prophecy that they might never be accurately determined.

Beaumont then got permission to take Alexis on to New York, where he found that the doctors "had too much personal, political, and commercial business on hand to turn their attention to physiological chemistry." He made a special trip to New Haven to consult Benjamin Silliman, who told him that Berzelius of Stockholm was "the man above all others best qualified to investigate the subject of such deep interest to mankind." He accordingly recommended that Berzelius be sent a liberal supply of gastric juice for analysis — "enough to fill a pint Congress water

bottle, carefully marked, sealed, and capped with strong leather and twine, and then cased in tin, with the lid soldered on so that no one may open it."

A pint of gastric juice was a large order, for it required half an hour or more to collect a small amount of the fluid from the fasting stomach. This tedious process must have considerably annoyed the bibulous Alexis, who doubtless thought it a long time between drinks. It may have wearied Beaumont also, for, without waiting to hear what was the opinion of Berzelius on the nature of the fluid that had been so painstakingly collected and forwarded, he went to Plattsburg with the intention of enlisting the aid of his cousin Samuel, still in practice there, in preparing for publication a report of his studies so far as they had gone.

That proved a hazardous change of base, for Alexis on a pretext promptly went off again to Canada, promising that he would soon return. This he did after some delay, and, though he was discontented and somewhat unmanageable, Beaumont between July and November of 1833 was able to carry through a fourth series of experiments in which he attempted to determine the difference in time necessary for normal digestion within the stomach compared with that required by the gastric juice in vials outside the body.

Meanwhile, no word was forthcoming from Berzelius; and as Silliman's report on the specimens of fluid submitted personally to him ended with the discouragingly evasive statement that "the laws of the Creator were often incomprehensible equally in His nature and His works," Beaumont felt obliged to proceed with the publication of his observations without further delay.

A cheaply printed book issued from a newspaper office with a Plattsburg imprint was not likely to excite wide at-

tention, much less find a purchasing public; and Beaumont, aware of this, undertook to sell the small volume by subscription. Under these inauspicious circumstances, in December 1833, eleven years after St. Martin's accident, the most notable and original classic of American medicine — now become a high-priced collector's item — was cheaply printed in an edition of possibly one thousand copies, put into its pasteboard covers at eight cents a volume, and distributed at the price of two dollars among the subscribers.

Since then, a full century has gone its relentless way, leaving changes in all things — changes unquestionably more marked in the field of science than in any other. Nevertheless, the more one ponders today over the text of this remarkable treatise and endeavors to put himself in the position of its author, faced by difficulties and discouragements only half told, the more one comes to appreciate the inspired genius that produced it and to understand how its reputation has slowly and steadily grown as the years have passed.

That a man, caught in most primitive surroundings, wholly untrained in experimental research, possessed of the most meager equipment, and scarcely aware of what prior contributions to the difficult subject had already been made, should, by observations on a human being, have forwarded knowledge regarding gastric digestion to a point at which it was left for Theodor Schwann three years later to add the discovery of pepsin as the single remaining important factor in the process, was truly a remarkable accomplishment.

We need not here and at this time pursue the matter further than the first printing of Beaumont's book. His later trials and tribulations with that elusive, wilful, and



alcoholic Alexis, who was long to survive his benefactor, were not yet over; but we can now, as Beaumont would have wished, let bygones be bygones. From that memorable June day on the Island of Mackinac when they first came face to face, it was inevitable that for all time their names should be inseparably coupled — the French *habitant* from what is now the Province of Quebec and the army surgeon of English descent born near this Connecticut village where we have come to pay him homage.

Enough has been said to show why Lebanon may well be proud of her native son, and why to the State of Connecticut, as a feature of her present tercentenary celebration, it has seemed fitting that the lovely stretch of road skirting his place of birth on Village-hill and over which it was decreed that he should set out independently and alone for the rendezvous that was to bring him celebrity should henceforth be called the Beaumont Highway. Among the many distinguished names that occur in the roll of our Army Medical Corps, it is possible that for the fulfilment of his "honest desire to contribute his mite to the promotion of medical science" the name of Beaumont will be longest remembered.

## X

### WILLIAM STEWART HALSTED 1852-1922

PROFESSOR HALSTED, certainly one of the most cultivated of surgeons, and, in view of the character of his contributions, regarded by many as the most eminent of his time, died at noon on Thursday, the seventh of September, in the Johns Hopkins Hospital, of which he had been surgeon-in-chief since soon after its opening. At that time, in 1889, neither he nor his clinical colleagues, Osler and Kelly, had as yet turned forty.

A man of unique personality, shy, something of a recluse, fastidious in his tastes and in his friendships, an aristocrat in his breeding, scholarly in his habits, the victim for many years of indifferent health, he nevertheless was one of the few American surgeons who may be considered to have established a school of surgery comparable, in a sense, to the school of Billroth in Vienna.

He had few of the qualities supposed to accompany what the world regards as a successful surgeon. Overmodest about his work, indifferent to matters of priority, caring little for the gregarious gatherings of medical men, unassuming, having little interest in private practice, he spent his medical life avoiding patients — even students, when this was possible — and, when health permitted, working in clinic and laboratory at the solution of a suc-

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cession of problems which aroused his interest. He had that rare form of imagination which sees problems, and the technical ability combined with persistence which enabled him to attack them with promise of a successful issue. Many of his contributions, not only to his craft but to the science of medicine in general, were fundamental in character and of enduring importance.

As a schoolboy at Phillips-Andover and as an undergraduate at Yale, he was prominent in sports rather than in the classroom, and in his senior year was captain of one of the early university football teams. As with many other young men, his ambition was not fired until his entrance into a professional school, and when, after his graduation in 1874, he entered the College of Physicians and Surgeons (Columbia) in New York, he settled down to prove his mettle, with the result that three years later, on getting his degree, he was awarded a prize for leading his class in scholarship. After serving as intern at Bellevue he was appointed house physician to the newly erected New York Hospital. Subsequently, two years were passed in Europe, where he devoted himself more especially to the subjects of anatomy and embryology. He studied at Vienna, Leipzig, and Würzburg, and his later surgical trend and investigative proclivities were distinctly colored by the German and Austrian surgery of the day.

On his return from abroad in 1880, he was made assistant demonstrator and subsequently demonstrator of anatomy at the College of Physicians and Surgeons. He also held a number of hospital positions, first at the Charity Hospital, where from 1881 to 1887 he was an attending surgeon and director of the out-patient department. For three years he was also surgeon-in-chief to the Immigrant Hospital, Ward's Island; and later, from 1885 to 1887,



an attending surgeon to both the Bellevue and Presbyterian Hospitals. During this period in New York, following his return from abroad, he supported himself mainly by teaching, and with Dr. George E. Munroe he organized a famous extramural course for students, consisting of practical exercises in the laboratory and at the bedside, to take the place of the time-honored quizzes which it was long the fashion for the New York students with hospital aspirations to attend.

During his last few years in New York he undertook an anatomico-surgical investigation on the anæsthetizing effect of the then little-known and newly introduced drug, cocaine. In this research, which had been begun in 1885, he was the first to utilize for surgical purposes the principle of nerve blocking, and was accustomed to demonstrate to dentists how painless extractions or even more extensive operations on the jaws might thus be carried out. He was the first also, at this time, to demonstrate spinal anæsthesia by introducing the drug into the lumbar meninges. In the course of these studies he used himself as a subject, injecting his own peripheral nerves in order to map out the areas of anæsthesia, and, unaware of the danger he was running, contracted an habituation to the drug, from which, with the help of a devoted professional friend, he effectually broke himself.

It was natural enough that cocaine was subsequently abhorred by him, and after Schleich's solution came to be generally employed as a local anæsthetic, he usually preferred to infiltrate with salt solution alone, which has certain anæsthetizing properties, rather than use even the diluted drug. Fifteen years later when the writer of this note, as Dr. Halsted's resident surgeon, stumbled anew upon the principle of nerve blocking for operations on

hernia and published a paper on the subject, he was utterly unaware that his chief had ever made studies with cocaine of any sort, so reticent was Dr. Halsted about this particular matter and so little did questions of priority interest him. It has remained for the dentists to call attention to his original work on regional anæsthesia, and a few months before his death they made due public acknowledgment of what Dr. Halsted himself had never laid claim to, and the knowledge of which he had even withheld, at least until recent years, from his house officers.

Before this tragic episode interrupted what would doubtless have been a brilliant career in New York, he had published a number of papers which showed promise of his technical gifts and abilities as an investigator, but it was not until he was brought to Baltimore in the late eighties by William H. Welch and got to work in the original pathological building there with Franklin P. Mall, Councilman, Flexner, and others, that his unusual capacity for research was shown at its full worth.

The studies of compensatory thyroid hypertrophy, one of his early researches, published in the first volume of the Johns Hopkins Hospital Reports, remained for twenty years the basis of our views regarding exophthalmic goitre as an expression of functional overactivity. The correctness of his observations and interpretation of them, indeed, remained unquestioned until he himself repeated the experiments and, failing to corroborate his original results, promptly reported the fact before one of the biological societies. It was a striking example of his scientific honesty, and it remained for someone else to point out, on the basis of new facts relating to iodine, how it was that his original interpretation had been nearer the truth than his later one.

Another of his early studies was on intestinal resection and suture, and he introduced a method of anastomosis of the bowel, based on the distribution of the blood supply and on the correct placement of the sutures, far superior to that of any of his predecessors. These two subjects, the surgery of the thyroid and of the intestine, continued to engage his attention to the end, and among his last publications was a monograph entitled *The Operative Story of Goitre*, published two years before his death, and another on the bulkhead principle of intestinal anastomosis.

His interest lay not in the number of cases he might operate upon but in working at certain principles of surgery, and in the course of his experiments upon the thyroid and parathyroid bodies he hit upon what is known as Halsted's Law — namely, that “a transplant of a portion of a ductless gland will survive only when a physiological deficit has been produced.”

On the opening of the hospital in 1889 he turned his attention to questions of technique, and was among the first American surgeons to grasp fully the principle of the new aseptic surgery. The introduction of silver as suture material and as a covering for wounds because of its bactericidal qualities was due to him. He studied the healing of an aseptic blood clot in closed wounds. He introduced gutta-percha in the form of “protective” as a dressing for open wounds.

He showed how silk could be safely buried in the tissues, an important principle many surgeons are incapable of learning. He was among the first to insist upon absolute blood-stilling in the course of operations in days when operations were bloody affairs, and he introduced the form of delicate pointed forceps for hæmostasis now universally in use. He also introduced rubber gloves into surgery in



the early nineties, and, being himself a painstaking rather than a brilliant or spectacular operator, it was long before gloves came into use in other clinics — indeed, for years they were very much scoffed at as clumsy impediments to manipulation.

His operation for cancer of the breast revolutionized the treatment of these cases, and the same might be said of his hernia operation, though in this he shared the honors with Bassini, an Italian, who introduced a high inguinal operation with repair of the canal at about the same time. In the late nineties his attention was chiefly centered upon the diseases of the gall bladder and its ducts, and the early radical operation on the common duct emanated from his clinic. Possibly few men in the country knew more than did he about the condition to which he was destined to succumb — a stone in the ampulla of Vater.

In later years he devoted himself chiefly to studies relating to the blood vessels and evolved a method whereby in cases of aneurysm the major trunks could be slowly constricted, and in this, as in all other subjects which his studies illuminated, his inventive genius was displayed, as well as his thorough knowledge of anatomy and pathology. He was the first successfully to ligate the left subclavian artery in its first portion for aneurysm, and the only surgeon who is recorded to have performed this rare procedure twice.

Halsted's honors were many. In 1900, at the centenary of the Royal College of Surgeons of England, he and J. C. Warren of Boston, W. W. Keen of Philadelphia, and Robert F. Weir of New York, were the four Americans chosen to receive an honorary fellowship. A few years later he was made an F.R.C.S. of Edinburgh, and also an LL.D. both of Edinburgh and of his Alma Mater, Yale.

Columbia gave him a D.Sc. and he was a member of the National Academy of Sciences as well as of many other foreign and American scientific bodies. Though his publications were comparatively few — rarely more than one or two a year — he wrote well and painstakingly, and many of his papers will remain among our surgical classics. The one surgeon he perhaps admired more than any other was the late Theodor Kocher of Bern, Switzerland, and the two men, in manner and methods surgical, in imagination and ideals, had very much in common. Both of them held their professorships for an unusual number of years — Kocher for forty-five, Halsted for thirty-three.

Halsted was a man who taught by example rather than precept. He was a safe, fastidious, and finished surgeon, by no means a brilliant and showy operator after the style cultivated by many of his contemporaries. He cared nothing for administration and, up to ten years ago at least, his staff never met as a body. He was not a successful teacher of undergraduates. A bed-to-bed ward visit was almost an impossibility for him. If he was interested he would spend an interminable time over a single patient, reviewing the history, taking notes, having sketches made, carrying the problem to the laboratory and perhaps working on it for weeks. Meanwhile his associates and assistants would run his clinic as best they could. In this way his school developed, none of his pupils after his own fashion, to be sure (it would have been impossible to imitate him), all of them nevertheless influenced enormously by his attitude toward surgery, and by his operative methods.

His loss to the Johns Hopkins Hospital which he served so faithfully and long, and to which he bequeathed his property, will be irreparable. It will be equally so to his many and devoted disciples. One of his long series of

resident-surgeons — who, as others have done, came to know him better after leaving his service, just as many sons learn to know their fathers not until after they have grown up — has in all respect and affection written this inadequate note of appreciation: —

Who knows whether the best of men be known, whether there be not more remarkable persons forgot than any that stand remembered in the known account of time?



## XI

### JAMES FORD RHODES

1848-1927

DURING that unsophisticated period of American life of which Mark Sullivan writes so entertainingly, the male Clevelander who amounted to anything, or thought he did, frequented a particular barber shop to be trimmed, shaved, and made presentable. What is more, he sought the attentions of a particular one of the many Negro barbers who held chairs in that tonsorial academy — the proprietor, in short, whom James Rhodes and some others had once upon a time set up in business.

Largely because coal, iron ore, and petroleum found the mouth of the Cuyahoga River a convenient meeting ground for their smoky purposes, the descendants of the aforesaid Clevelanders have come to display their monograms on limousine doors; but in those simpler times it was no less a mark of distinction to have one's insignia on a private shaving mug in George Myers's personal rack, and to receive his addresses, both intra- and extracephalic.<sup>1</sup>

This high distinction, I hasten to add, was not for those lambs like myself of a later generation who presented themselves periodically merely to be shorn, and whose

<sup>1</sup> In the footnote of acknowledgments on the final page of the last of his printed volumes Mr. Rhodes has said, "I am indebted to George A. Myers of Cleveland for useful suggestions."

*Reprinted from "Later Years of the Saturday Club," Houghton Mifflin Company, 1927.*

chins, destitute of adornment, were unworthy of attention. However this may be, it came about that once, when living in Baltimore and on a visit to Cleveland, I promptly repaired to the place where all the news of births and burials, of engagements and weddings, of who was in town and who wasn't, of events social, theatrical, and political, would be softly poured into your ears by the melodious voice of a colored gentleman who meanwhile dextrously separated you from your untidiness.

It was not long to wait. There soon arose from the favored chair a distinguished-looking person whose beard, then becoming streaked with gray, had just been properly Vandyked; and I was signaled to take his place. There we stood, my predecessor before one mirror buttoning his collar, I before another unbuttoning mine, when the barber, observing that we were unacquainted, with gentle reproof promptly introduced us, using in each instance our Christian names.

Mr. Rhodes was then in his fifties, old enough to be my father, and there was no possible reason why he should have known of my existence; but we shook hands over the intervening chair, and I stammered something to the effect that I should have recognized him, as I had seen him given an LL.D. at New Haven shortly before. Whereupon our friend the barber interjected: "Oh, yes, I know all about that. That was for writing those books. But Mr. Rhodes, he did the easy work on 'em and I did the heavy. Every morning when I went out to his house on Euclid Avenue to shave him I had to stop at the Case Library so's to tote a big bundle of things he wanted. I did the heavy work on those histories and should have shared the LL.D. with my partner."

Such was my introduction to Mr. Rhodes, and not only

his friendly greeting but the deep-voiced chuckle with which he met the barber's recital made a lasting impression on me. That generous, whole-hearted, and sympathetic laugh, the laugh of a good listener, was no less an unforgettable characteristic of the man than his unfailing courtesy.

Although James Rhodes was a most delightful companion and conversationalist, there were certain things he never talked about. One of them was himself. In consequence, his early life is almost a closed book even to those who might be regarded as the intimates of his later years in Boston. To this reticence may possibly be ascribed the myth that paternal constraint had forced him out of a youthful bent towards literature. For this myth — other than that he did not seriously begin his career in letters till middle age and after his father's death — there is no foundation. His interest in contemporary history was cumulative — a slow process of saturation which fortunately did not spill over before it was well assimilated. He might have pursued any career to which he inclined, but he grew up in a puritanical community where honest people were supposed to earn a livelihood, which neither art nor letters were likely to provide. Hence it was natural enough that both he and his brother Robert should have taken it for granted that they were to follow their father's footsteps into business.

Neither of them went through college, nor did their brother-in-law and future partner, Marcus Alonzo Hanna, that somewhat maligned person who in later years got his political nickname of "Uncle Mark" from the selfsame George Myers I have mentioned. Nor, now that I think of it, were many of those who in the Middle West rode on the tide of financial prosperity just after the Civil War



college-bred men. The hard-scrabble school of experience had to suffice.

The father — “Dan” Rhodes, as he came to be widely known — had migrated as a lad from Sudbury, Vermont, to the Western Reserve in the days shortly after the completion of the Erie Canal. He was a Democrat, as was his cousin Stephen A. Douglas, who, leaving Vermont at about the same time, had drifted still farther west to pick up his first job in Winchester, Illinois. In years to come, during James Rhodes’s boyhood, the speeches of the upholder of popular sovereignty, as reported each week in the *Congressional Globe*, must have been read with avidity by his Ohio cousins. And since “The Little Giant” was a frequent visitor at their hospitable home, it may be that these contacts with Lincoln’s political opponent and the conversations overheard were what served to plant in the boy’s mind the seed so slowly to mature.

For the future historian of the anti-slavery movement no better time or place could have been chosen in which to be born — in Cleveland, on May 1, 1848. The *Liberator* was perhaps more eagerly read in Ohio than in Massachusetts. Dwellers in the East could hardly have realized the intensity of the feeling which existed in the states so recently split off from the Northwest “free-soil” Territory. This was particularly true of Ohio and of its Western Reserve, through which ran one of the main branches of the Underground Railroad. And possibly the very fact that Daniel P. Rhodes became a Copperhead, the synonym for a Democrat in the particularly trying autumn of 1862, may have been another factor which enabled his son in later years to take a dispassionate and judicial view of such episodes as that which centered around Vallandigham and his followers. It was to stem this treasonous movement for

peace that the Union League Clubs throughout the country were formed. Strange chance that the very house of the Union Club at No. 8 Park Street — the meeting place of the Saturday Club — which was opened on October 15, 1863, as a place “where gentlemen may pass an evening without hearing Copperhead talk,” should have come, in after years, to welcome at its board the son of an Ohio Copperhead and the cousin of the man who is said to have precipitated the Civil War through the abrogation of the Missouri Compromise.

The early sixties in the then Middle West were not favorable years for a lad to get a thorough educational foundation. The stirring events of the war were too absorbing. Even at the public high school which Rhodes attended, the principal each morning read to the assembled pupils the political and military news of the day and discoursed upon it. This for the future purposes of one, at least, of the students may not have been time altogether wasted, but it was no preparation to fit him for entering college. So in the fall of 1865, with his seventeenth birthday behind him, he was admitted as a special student in the University of the City of New York, where for a year he worked on the physical sciences under the Drapers, John and Henry, and took a course in history with Benjamin N. Martin, meanwhile reading far ahead of his classmates. Then, in obedience to his father's request, a change was made to the original University of Chicago, where for another year he studied rhetoric and metaphysics and became addicted to Herbert Spencer. He mentions somewhere in one of his addresses that the Professor of Literature at the time introduced him to the *Nation* as a substitute for the *Round Table*, which he had been reading, and he pays tribute to the influence Godkin's cogent

columns had upon the direction of his thoughts. As the weekly *Tribune* had been the political Bible of the Middle West before the war, so the *Nation* came to be in the post-bellum years.

Ostensibly in preparation for a business career, there followed a period of study abroad: in Paris he attended lectures at the Collège de France,<sup>1</sup> studied the political institutions, and acted as correspondent of the *Chicago Times*; in Berlin he took a course in iron metallurgy; and he subsequently made a tour of inspection of the iron and steel works of Germany and Great Britain, inquiring into the process of making Bessemer steel, which was coming to replace rolled iron. After two years of this, which gave him a good reading knowledge of French and German, if nothing more, he returned to Cleveland in 1870 to learn the practical side of business with the firm of Rhodes and Card, producers and dealers in coal, iron ore, and pig iron.

The James Rhodes of heavy figure we have known so well at the Saturday Club table is said to have been at this time a dapper young man with the fashionable flowing side-whiskers he had cultivated in Piccadilly; and it is evident that coal and iron did not wholly engross him, for he shortly won the hand of Miss Ann Card, the charming daughter of his father's partner. The young couple took up housekeeping, handsomely and happily, in a large house directly opposite that of his parents, who lived at a fashionable place known as Franklin Circle in West Cleveland. There was born their first and only child, who received at baptism his paternal grandfather's name.

These interruptions seemingly had no ill effects on the coal-and-iron industry, for the business prospered, and in

<sup>1</sup> It is interesting to note that they were by Édouard Laboulaye on Montesquieu's *Esprit des Lois*.



1874 the name of the firm was changed to Rhodes and Company, at approximately which time Robert and James Rhodes, M. A. Hanna, and George H. Warmington were taken into partnership. But as the years passed there was one member of the firm who, when friends dropped in for a smoke or some business gossip, was apt to be found secluded in a back room absorbed in the works of Macaulay or some such bookish fellow who could not possibly have known much about the coal and iron that were being turned into steel in the Cleveland mills. So we may presume that the others chiefly attended to the firm's business, and that as time went on the youngest member was allowed to pursue his studious and sedentary devices unmolested.

It was during his brief student days in New York that he first encountered and read with enthusiasm Buckle's *History of Civilization*, the three-volume edition of which had just appeared. This may have provided the leaven which for the next twenty years subconsciously worked in his mind and directed the course of his reading. And if we will overlook Buckle's unsociability, his nerves, his addiction to chess and tobacco, there are recognizable parallels in the lives of the two men as self-made historians whose writings, born of their middle age, had, to the confusion of lifelong historical scholars, an amazing and instantaneous success. But this was to come. He had not yet grown round-shouldered digging historical data out of newspaper files.

Just when his "design to write the history of the United States from the introduction of the Compromise measure of 1850 down to the final restoration of Home Rule in the South twenty-seven years later" began to take such shape as to compel composition, is not apparent. Some of the associations and incidents that attracted him to this period

and particularly fitted him to deal with it are obvious, but whether he had the gifts essential to his chosen task might well have been doubted.

To be sure, his pen had not remained wholly unexercised. He was a regular contributor to a trade paper known as the *Iron Age*, for which he wrote "business barometer" articles of a sort so unusual for such a publication that they attracted attention. There were also occasional book reviews, one of which at least, written in 1885, did not happen to get published. It dealt with Woodrow Wilson's *Congressional Government*, and was forwarded to the Editor of the *Atlantic*; but T. B. Aldrich gave preference to a rival contribution in which Professor Wilson's volume had received sufficient attention. It was entitled "Ministerial Responsibility and the Constitution," and was written, as it happened, by another who was to become a member of the Saturday Club.<sup>1</sup>

The return of this particular manuscript may not have caused him so much entertainment in 1885 as it did in later years. Whatever its effect may have been, the episode coincided with the decision that, if he were really to succeed in his "design" of writing effectively, he would have to retire from business in order to prepare himself more fully; and, though his membership in the firm was not yet officially severed, he pulled up stakes and with his family went abroad for nearly two years of study and travel. On his return in the latter part of 1887 he set diligently to work on his task.

Not only had he been an inveterate reader during the twenty years past, but he had been a methodical note-taker, and with the aid of what he called his *Index rerum*, a series of commonplace books with notes and clippings

<sup>1</sup> A. Lawrence Lowell.

which he had persistently kept, he made during the next four years rapid progress with the first important decade of his projected story, which brought it up to Lincoln's election. But for such precisely documented writing as he had come to engage in, even with George Myers doing the heavy work on the newspaper files, more favorable surroundings than Cleveland then afforded were essential. Consequently in 1891 the partnership of Rhodes and Company was dissolved, to be resumed under the name of M. A. Hanna and Company; and with his first two volumes already well in hand he departed bag and baggage for Cambridge, influenced partly by the fact that his son, at the early age of fifteen, had just entered Harvard.

Largely a self-taught man, and fully aware of the defects of his early schooling, James Rhodes was possibly almost as much surprised as his former Cleveland associates at the reception accorded his first two volumes on their appearance two years later. The chances had been a hundred to one against him. But what is regarded as 'adequate preparation' for a given task may inhibit rather than stimulate productiveness; and with no pretensions to fine writing he had come in due course to engage in his researches with a fresh mind, an exceptional memory, a capacity for sustained literary effort, and a passion for historical truth, which more than atoned for any presumed educational deficiencies. He had studied thoroughly the best of his predecessors, ancient and modern, and was not staggered by the accomplishment even of those he felt were the four greatest, Thucydides, Tacitus, Herodotus, and Gibbon — with Tacitus at the top.<sup>1</sup> "To preserve

<sup>1</sup> It is curious that the contemporary record by Tacitus covered twenty-eight years and the reign of six emperors, while that by Rhodes covered twenty-seven years and six presidents.



from decay the remembrance of what men have done" was, after all, but a modest enterprise in Rhodes's estimation, and he went about his task in his own independent and original way, with candor, sincerity, and thoroughness. Literary style alone never gave anyone a niche in the temple of history.

The impulse to break with relations and friends at forty-three years of age in order to pursue his historical researches in a new community where he was utterly unknown must have taken determination and courage. Cleveland, not yet afflicted in those days with the smoke of prosperity, was a delightful place of residence, more New England than New England itself, a town of individual homes, of elm-shaded streets, and of sufficient repose, so that people knew one another well. To these associations James Rhodes, even after spending half of his life elsewhere, remained to the end devotedly loyal, and it is fitting that there among his own people his ashes should in the end have come to rest. He says in one of his letters: —

Of course you have heard the variation of Shakespeare:

Some are born great.

Some achieve greatness.

And some are born in Ohio.

This, as I remember it, was stated during the Hayes administration. Dear old Howells, Sloane, and I were one night at dinner at Carl Schurz's, and on comparing notes we found that the native place of all three was Ohio. Howells was born at Martin's Ferry; Sloane near Steubenville.

But this loyalty to his people and place of birth does not mean that he could not and did not enter enthusiastically and warm-heartedly into the new life, where his sterling qualities and breezy geniality could not long go unappreciated. As Bliss Perry has so well said: —

No man who ever became a Bostonian in middle life conquered that difficult city more easily and completely. . . . A singularly modest scholar, he hated publicity, and was not one of the men who like to be seated upon the platform. Yet for nearly thirty years, and up to the period of his final invalidism, he was despite himself a very well-known personage. His heavy figure, shrewd kindly face, and loud cheerful voice were familiar to all residents of that inner Boston which begins, let us say, at the Athenæum on Beacon Hill, and ends at the Historical Society's building in the Fenway. That is not all of Boston, but it gives plenty of room for a triumphal procession. . . .

Not until he was forty-five did he publish the first of his seven volumes on the *History of the United States from the Compromise of 1850 to 1877*. Its success was instantaneous. . . . Honors began to pour in upon him as volume after volume appeared; degrees from Harvard, Yale, Princeton, and Oxford; membership in the National Academy of Arts and Letters and in many learned societies; a gold medal from the Institute, a Pulitzer prize, and all the other tangible recognitions of his great achievement. Every element of the triumphal procession was there — except that there were no voices of detraction.

It was indeed an amazing triumph. I may be permitted to quote the words of another historian in regard to it. "Suddenly," he says, "there stepped into the foreground this student in what is at least a province of literature and who was producing therein one of the very few really great histories which have ever been written." High praise this! But still higher, to my thinking, is the further comment that "few men have ever taken so much adulation with such an equable air almost of ignoring it. Never once publicly or in private, by word or bearing, did he indicate any appreciation of the fact that he was a celebrity."

He was a man of great simplicity who loved his friends and enjoyed having them at his home. Those who have sat at his bounteous table and later before the open fire in

his capacious library, whether at Beacon Street or at his summer home in Seal Harbor, will long carry greatly treasured memories of a perfect host and hostess. That he should have fallen on hard times; that the Great War should have depressed him more than perhaps it would have done had arteriosclerosis not begun to play its sorry tricks with his intellectual vigor; that he should have felt the necessity at this particularly unfavorable time of compiling what could hardly have been other than the least successful of his published works — all this need not detain us. Of happier memories in which we may rejoice there is an overflowing abundance.

James Rhodes was a modest, unselfish, courteous gentleman to all he met, high or low. He could with equal grace and charm of manner hold the affection and esteem of those statesmen and scholars counted among the leaders of his time; or set up a Negro barber in business and remain for forty years, in spite of their opposed political views, his undeviating friend and correspondent. But beyond his capacity for and tenacity of friendships, patriotism was his outstanding quality. The sympathies of a true patriot are human, not partisan, and no one in the least blinded by prejudice could have produced those singularly impartial records of that controversial period from 1850 to 1860 which almost overnight raised him from obscurity to a permanent place among our foremost historians.



## XII

### GEORGE STRONG DERBY

1875-1931

AFTER a brief illness, George Derby, in his vigorous prime and at the height of his career, died of pneumonia at the Massachusetts General Hospital on the afternoon of Saturday, December 12 — a grievous blow no less to his friends and patients than to his school and to the profession at large, which held so many of his devoted pupils.

There was every reason to expect that like his father, Hasket Derby, before him he would have looked forward to a much longer span of life, for they had followed much the same path. Both were graduates of the Harvard Medical School; both house officers in the Massachusetts General Hospital; both had studied abroad under the leading ophthalmologists of their day — the father under von Graefe, Bowman, and Donders, and the son under Fuchs in Vienna, Snellen in Utrecht, Axenfeld in Freiburg, and later at Moorfields in London.

They both in turn volunteered to serve, as their forbears had done, in the war that beset their particular generation; they both, needless to say, were eminent in their special field of work, holding positions of leadership in the Massachusetts Charitable Eye and Ear Infirmary and covering

*From the "New England Journal of Medicine," December 24, 1931.*

their specialty in the Harvard School. Each of them was honored by receiving an honorary membership in the *Deutsche Ophthalmologische Gesellschaft*. Indeed, with altered dates and some minor changes, the brief biographical sketch of the father, written by the son for Kelly and Burrage's *American Medical Biographies*, might equally well stand as the record of his own shorter life.

A certain Roger Derby in 1671 migrated to this country from Devonshire, England, and, after first settling in Ipswich, moved in course of time, after the death of his first wife, to Salem. There, to be stepmother for his eight children, he married a widow, Elizabeth Hasket, whose youngest sister complicated matters from a genealogical standpoint by becoming, ere long, sister Elizabeth's step-daughter-in-law.

But this is less important than the fact that the male descendants of Roger Derby, as sailing masters, navigators, and merchants, showed such energy in expanding the maritime trade into something beyond the mere coastwise exchange of Northern fish for Southern molasses and rum that Salem soon became the leading port in the Colonies, and all New England shared in her prosperity. How Britain's unwise Navigation Acts threatened to curb this mercantile activity, and what this source of irritation had to do with the growing estrangement from the Mother Country felt in these parts is a story that needs no retelling here.

Richard, the son of Roger, with other Salem skippers, acted as one of the pilots in the Port Royal Expedition. The next Richard, his son, we find, at the age of twenty-four, chief officer of a sloop outbound for Cadiz; and in course of time this second Richard's son, John, in a speedy schooner, the *Quero*, carried the first news to England of

a certain affair at Concord and Lexington, which permitted the publication there, before the Royalists' account of the episode arrived, of an appeal to Great Britain, signed by Dr. Joseph Warren, President *pro tem.* of the Provincial Congress.

In the trying years that followed, the Derbys sent out from Salem a goodly proportion of the hundred and fifty or more armed privateers that played such a picturesque and hazardous rôle in the War for Independence; and the first news of the Treaty of Paris was brought home in 1783 in one of Richard Derby's speedy ships. This happened not long before his death, at which time his son, Elias Hasket, took the helm of the great business and further enlarged its scope by reaching out for the China trade, one of the most famous of his boats having been the renowned clipper, *Grand Turk*.

This first Elias Hasket was followed by two more of the same name before we come to Dr. Hasket Derby, whose brother Richard, also a distinguished ophthalmologist, set up practice in New York City. Through what influence the medical tradition came at this time to be injected into this hereditarily mercantile family is not clear, though the fact that the second Richard Derby had married the widow of Dr. Ezekiel Hersey of Hingham may have had something to do with it; for it was she who not only founded the Derby Academy in Hingham but lived to carry out the wishes of her first husband in establishing the two Hersey Professorships (that of Anatomy and Surgery and that of the Theory and Practice of Physic) in the Harvard Medical School.

We can see from all this what was in George Derby's blood and can easily understand his affection for all that had to do with watermanship and the sea. His father was



one of the first to appreciate the attractions of Mount Desert as a summer place of residence, and there much of the children's vacation time was passed on and in the water; and later on, after George's marriage to General Marshall Brown's daughter, his summer vacations came similarly to be passed at her ancestral home on Casco Bay, near Portland. His first tiny boyhood sloop naturally enough was christened the *Quero*, and his last boat — a fine schooner in which he and his wife, who shared his love for the sea, had planned for many a voyage — was no less naturally named the *Grand Turk*.

After his preparatory years at Noble's School, he entered Harvard, graduating in the class of 1896; and it must have been a proud day for him when, after three years of rowing on his class crew, he finally won a seat in the University boat. Possessed of a superb physique, he subsequently kept up an active interest in oarsmanship; for years he regularly had a seat in the crew of the Union Boat Club, and in 1914, when president of this club, he arranged the first American race with England and raised the money to take abroad the crew which won the Henley regatta that year. And when for the last time he made one of the "gentlemen's eight" during race week at New London, he is said to have been ten years older than anyone else in the shell.

He participated also in other sports, was an excellent tennis player, as good a golfer as a doctor should allow himself to be, and was long a devotee of the less time-consuming but more strenuous game of court tennis, in which he so excelled, partly owing to his left-handed "cannonball service," that he was the runner-up in the national tournament a few years ago. Thus, winter and summer, by hard and regular exercise in which he took

delight, he kept himself throughout life in perfect physical trim. Beating his competitor was not what he sought from sport, but the glow of health it brought him.

When, early in 1916, the Harvard Medical School Unit, subsequently known as Base Hospital No. 5, came to be organized, Dr. Derby was one of the first officers to volunteer; and when, a year later, the Unit was sent overseas to serve with the British Expeditionary Force, he proved himself an invaluable member of the command. In the autumn of 1917, he served at one of the casualty clearing stations during the Passchendaele battles and subsequently came to be actively connected with the large ophthalmological hospital at Wimereux, near Boulogne, which was under the direction of his long-time friend, Colonel Sir William Lister, the nephew of Lord Lister. This experience peculiarly fitted him for duty with the American Army, by which he was called in July of 1918 to become the Assistant Consultant in Ophthalmology with headquarters at Neufchâteau in the Vosges. Of his wartime experiences he has given a straightforward account in his college class book for 1921, which, however, contains no hint of the pangs of homesickness which often beset him in those two years of separation from his family, for he was essentially a home-loving person.

He was a man, as can be seen, who was responsive to the call of service, and it was natural that positions of responsibility should be thrust upon him unsought. He was made president of his class in the Medical School, and held its members closely knit by bringing them together for a meeting and dinner every spring. On the solicitation of Dr. Rotch, he long acted as medical director of the board of the Infants' Hospital; and largely through his instrumentality this institution, which began as an



independent unit, became fused with the neighboring Children's Hospital.

It was largely due to him also that the Wet Nurse Directory of Boston was organized. For a period of some ten years he was secretary of the ophthalmological section of the American Medical Association, finally in 1923-1924 becoming its chairman. He for long volunteered to fill the position of ophthalmologist to the Carney Hospital and to conduct the clinic his father had established there. For many years he served on the board of control of the National Society for the Prevention of Blindness. He was one-time president of the American Ophthalmological Society, the highest honor for those in his special field of work; and at the time of his death he was president of the Suffolk District Medical Society, a position which entailed no little responsibility and sacrifice of time.

He was a highly skillful and successful ophthalmic surgeon and loved his branch of the profession, but in his professional life he perhaps accomplished more through his native ability as a wise administrator than as teacher or investigator. Nevertheless, he put through some excellent pieces of research work and was at the same time a most conscientious teacher of his specialty during the twenty-eight years he served on the staff of the Infirmary. Indeed, his was always one of the most popular courses in the undergraduate curriculum.

What was possibly his most important contribution to ophthalmology came from his studies of interstitial keratitis; and in connection with the Social Service Department he organized an effective system for the follow-up treatment of these difficult cases. For his paper on "Some Aspects of Ophthalmia Neonatorum" he was awarded in 1916 the much prized Knapp medal, which is at the dis-



posal of the ophthalmological section of the A.M.A. More recently he was engaged in a painstaking study of the threshold of light perception — a matter of importance especially in the early recognition of the diagnosis of glaucoma, on which subject he was an authority.

But George Derby's native modesty was such and his reticence about himself so great that there is little to record of the many researches in which he from time to time may have engaged. His practice was very large and engrossing, and much of it was given over — as invariably happens with doctors whom people admire and trust — to the unremunerative care of the families of his professional brethren. After his appointment in 1923 to the Williams Professorship of Ophthalmology in the Harvard School — a post he might have had many years earlier for the asking — he with others set about reorganizing the ophthalmological work at the Infirmary and succeeded in arranging for a continuous service of those in attendance there. And in later years he had much to do with the proper disposition and utilization of the fund for research in ophthalmology which grew out of the original gift to the school made by Dr. Lucien Howe of Buffalo. Dr. Derby, having refused the directorship of this fund, became the natural choice of everyone as chairman of the committee and devoted himself to the building up of an ideal departmental library, in this way fulfilling what had long been one of his pet ambitions.

Thus George Derby moved through his all too short life respected by all and beloved by those who, like his patients, were permitted to come into close touch with him. He had a strong spirit of service, great sympathy, innate modesty, and a rare sweetness of nature which led him instinctively to push the other man into the more

prominent place. His motto, chosen in childhood, had been "Moderation in all things." Beneath his seemingly phlegmatic exterior there burned a highly emotional nature which he kept under such perfect control that it was unapparent. Few realized that his life was one of constant self-restraint; and it would appear, indeed, that his almost daily bouts of exercise were used by him as a sort of safety valve; for, win or lose, a vigorous contest calmed him.

In this brief and inadequate sketch overmuch has possibly been said of the Derby traits so apparent in his make-up, and not enough of traits equally distinctive inherited in all probability from the Masons on his mother's side, with its line of distinguished lawyers and clergymen. His strongly religious undercurrent of mind and the fact that for many years he had served on the Dean's Council at St. Paul's Cathedral were scarcely known even to his intimates. He was a Grecian in his love of health, of bodily fitness, and of the outdoors; but at the same time he never lost sight of the goodness of the Lord in the land of the living.

### XIII

#### PERRY WILLIAMS HARVEY

1869-1932

It is gratifying that the set of Baskerville editions on display should be deposited here as a permanent memorial to one of the most popular and lovable Yale men of his time. Had "Tot" Harvey, as he was affectionately known to everyone, lived to attend last June's reunion of the Class of '91, he would have been no less surprised than were other graduates, who from force of circumstance had more or less lost touch with present-day Yale, to find that a great library had come to be recognized as the very *cor et anima* of the University.

It may be said, without disrespect to a thriving young Scientific School, that in our undergraduate days Yale was still Yale College. And in those happy-go-lucky times the then library on the western boundary of the old campus was to us merely a building and not a collection of animate books, the necessary tools of education.

I remember once — and only once — taking a look within its gloomy portal and wondering how anyone could choose to waste the all-too-fleeting days of youth in that dismal place, where *Lux* was dim and *Veritas* had

*An address at the Sterling Memorial Library on December 5, 1936, at the opening of an exhibition of the Baskervilles collected by Mr. Harvey and given to Yale by the members of his family. From the "Yale University Library Gazette," January 1937.*



the musty smell of mouldering calf. All faces were set toward a lure, not far beyond, that needed no advertising, for there at least, with patience and good luck, after the perspiring candidates for the teams had bathed, one might get a brief turn with a bar of soap under one of the two (or was it three?) public showers.

Had the well-beaten path to the tiny red brick "Gym" on Library Street actually led *through* instead of *around* the building which then held the ancient Linonia and Brothers collection, some of us, in stumbling over books, might to our great advantage have discovered their existence earlier than we came to do. But no such deception was needed to draw us by the nose to the place where muscular brawn was ardently cultivated — most successfully, in our particular generation, to the great glory of *alma mater*. That an equal amount of exercise given to stretching the *pia mater*, in the building at the blind end of the street, might prove, to say the least, an equally profitable expenditure of our time was never suggested — loud enough to startle us.

To be sure, the Chittenden annex, which bore scant architectural resemblance to anything else on the campus, much less to the parental repository for books, was erected in our senior year just in time for us to get a photograph of its greatly admired Tiffany window to insert in the annual *Pot-Pourri* — just in time also for the story to be circulated that, at closing hour on a certain overcast afternoon, someone dropped in to consult the librarian and found him looking for his umbrella under "U" in the newly made card catalogue, the pride of his heart.

All this comes back to me with a deep-seated nostalgia for something that is forever gone — meaning, of course, one's physically vigorous youth, for want of which nothing

can ever again be quite the same. And since this period of life may be taken to close with graduation from college, it is on the cherished memories of our youthful intimacy that I somehow just now feel disposed to dwell, though it obliges me as of old to flutter after Perry into a light meant to be focused on him alone.

First cousins, near neighbors, and almost precisely of the same age, we should have found — had we been at all interested in the subject — that among our common forbears were Williamses and Fitches, Mygatts and Knapps, Days and Starrs, from this section of New England, who with their Bibles, shotguns, spinning-wheels, and other belongings, including a black boy or two, had joined the great migration in ox-drawn carts to the promised land of the Western Reserve. There, in due course, we were inconspicuously born, along with other siblings galore, and came to be baptized at a Presbyterian font with a partially inverted combination of names — his mother's name, indeed, having been Mary Cushing Williams Harvey.

With an equal start in life, with the same astrological influence to affect our houses, and with similar opportunities, one might have expected us to be more alike. But whether because he was the oldest of his three brothers and I the youngest of my six, or for some other reason, he matured more rapidly, and during the long years of our constant companionship invariably proved in all our competitions, in or out of school, the better of the two. Blessed with a quick perception and a retentive memory, he could race through his lessons, even in college days with a room full of noisy companions; while I, always a plodding learner, with cotton in my ears, would be sporting my oak and tearing my hair somewhere in seclusion.

We went through public schools together, took piano and dancing lessons from the same aunt, French and drawing lessons from the same uncle, coasted, skated, and fought snowball battles in winter, spun peg tops in top season, shot marbles in marble season, shared a yard of bantam chickens, a loft of pouter pigeons, a hutch for rabbits or guinea pigs, and walked miles together on hot summer days to slide down a clay bank for an afternoon swim in Lake Erie.

Instinctively out of the very air, counting-out jingles like "Eeny, meeny, miney, mo" were learned and what was meant by being "it"; also the rules of hide-and-seek, of pom-pom-pullaway, of mumblety-peg, of crack-the-whip, of prisoner's base, of sheepfold-down, of follow-the-leader, of duck and drake, of hopscotch, one old cat, hare and hounds, back-yard shinney, vacant-lot football, and scrub baseball — what memories they bring up of barked shins and torn trousers and occasional broken bones! Indeed, on a certain Fourth of July, having painstakingly extracted the powder from a pack of firecrackers, we touched it off with a piece of live punk, thereby, to our consternation, removing two pairs of eyebrows and eight sets of eyelashes in the same flash. Could there have been any greater degree of intimacy?

On rainy days we rummaged together in attics among old family letters for postage stamps, collected and swapped postmarks and trademarks and butterflies and beetles and birds' eggs — even as did all boys everywhere in the well-filled hours of that happily unsophisticated era when shoe leather got quickly worn thin. Ere long the telephone and motorcar effectively put out of business the old Negro cobbler whose shop was conveniently near at hand on a back street. The time had come when even children were



no longer obliged to walk — much less “run” errands.

It was a worthily pious era in which the day began with family prayers; when punctuality was expected at meals; when a portion of one’s pin money, painfully earned doing a choreman’s work about the place, had to go in the missionary box; when on the Sabbath, after attending both Sunday School and church, one returned home on foot to a family dinner which was followed in the afternoon, since play of any sort was banned, by a vast amount of reading aloud — then by no means a lost art.

And as theaters, a resort of the wicked, were taboo except perhaps for an annual matinée at something beyond reproach like *Uncle Tom’s Cabin* or Joe Jefferson in *Rip van Winkle*, our weekday evenings were usually spent at one another’s homes with music and round games, or in such mild contests as verbarium, anagrams, parchesi, or bezique, in all of which one’s elders joined — when at Tot’s house, indeed, even a grandparent. All of this was very good for us, I am sure, particularly because it irked Grandfather Williams excessively to be beaten at games, and it always had to be arranged by passing cards under the table that he might just manage to win; he fortunately, from our standpoint, grew hard of hearing in his later years, so this could be surreptitiously done. It at least taught us early that winning was not everything.

Another form of discipline, now quite outmoded, lay in the fact that, when caught at such peccadillos as telling fibs, stealing from the neighbors’ fruit trees, reading forbidden “dime novels,” or making faces at one’s fancied enemies, children in those days were promptly turned over a parent’s knee while with the back of a long-handled hairbrush their bared bottoms were spanked in a manner

to horrify a twentieth-century child-psychologist, and fill with forebodings his or her mind, as the case might be.

I wonder how many of you, who engaged with your elders in old-fashioned song-dance-acting combinations, have memories of "London bridge is falling down"; of "Oats, peas, beans, and barley grows"; of "Here we go round the barberry bush," and so forth: —

Come all ye young men from your wicked ways,  
Sow your wild oats in your youthful days,  
And we'll all be happy as we go on. . . .

And there was another: —

Thus the farmer sows his seed,  
Thus he stands and takes his ease,  
Stamps his foot and claps his hands  
And wheels about to view his lands.

with its chorus of "Waiting for a partner," and so forth.

I suspect that some of these round games, half song and half acting, were borrowed from the Shakers, who had a settlement on the outskirts of Cleveland and part of whose peculiar form of worship was to "dance before the Lord." Certainly directly from them must have come this one of our favorites, with its many interminable verses: —

I put my ugly mug in,  
I put my ugly mug out,  
I give my ugly mug a shake, shake, shake,  
And turn my body about.

But what, you may well ask, has all this to do with Perry Harvey and the collection of Baskerville editions here before us? It has this much at least. For all the simplicity of life in what was then called the Middle West, and the necessary practice of thrift during the two decades

that followed the close of the Civil War, there was one thing on which the descendants of the old New England families did not stint themselves, and that was books. How surprised they would be to find their grandchildren living like Pueblo Indians — and scarcely better clothed — in tiny apartments reached by elevators and in which the family bookcase has been supplanted by a radio set. To be sure, it may be camouflaged to resemble a set of books, bound and labeled "God and the Universe," in eight volumes — an acknowledgment, like the lumbar buttons of a tail coat, of some nigh-forgotten period when such objects as buttons and bookshelves were really put to use.

In those less hurried times people were omnivorous readers, and the homes of my recollection were overflowing with books and magazines. These, be it said, were read almost of necessity by the light of day, for that newly invented contraption, the gas droplight, scarcely illumined more than the book held by the one person seated dangerously below it. Just imagine the expression on the faces of our present-day offspring were it suggested that they stay in on a Sunday afternoon and hear Oliver Wendell Holmes read aloud! The gathering on one such occasion that I recall was at Perry's house, and in the course of the reading — from the *Autocrat*, I surmise — a certain book was said to be "rare as a Baskerville Addison." And when someone ventured to ask what that might be, from a nearby bookcase a specimen was produced — one of the very four-volume set, in all likelihood, that formed the nucleus of this collection before us.

Later on, when we were getting into our teens, something happened quite exceptional for those days before summer camps and manual training for boys had become



the vogue — something that doubtless had much to do with the development of our particular group of cronies. For we came under the spell of a remarkable young man, Newton M. Anderson by name, who had newly come to Cleveland as teacher of physics in the high school we attended — a man fond of boys and with the native gifts they greatly admired. There was nothing he liked better than “roughing it” in unfamiliar country, where he could easily outdo Robinson Crusoe in resourcefulness. With tools of any sort he was a finished master, but all he needed to interest us an afternoon through was a few old strands of rope for splicing and the tying of knots.

It all began one summer when he took four of us cousins “up the Lakes” as far as the Sault Sainte Marie on a highly successful fishing expedition. The following winter, in a disused barn belonging to a Harvey uncle, he gave to us and to a number of our companions, on our free afternoons, a course in carpentry. Each had his own bench and the full working equipment of a cabinet-maker’s trade. Meanwhile, for almost nothing, a fifty-acre island was purchased from the government in the upper Huron wilderness just at the mouth of the Sault, four miles from the nearest habitation.

To this island we gave the name Maskenoza — the Indian word, I believe, for a pike, which it somewhat resembled in outline — and there we passed most of the following summer, felling spruce with which to build our camp, cooking our own meals, supplying with gun and rod most of our own provender, exploring the neighboring country so full of border history, and in leisure time surveying and mapping our small domain.

That winter a staunch forty-two-foot schooner was built, in which, on the eagerly awaited close of school, eight of

us sailed from Cleveland to our beloved island, another eight having preceded by steamer to get the camp rebuilt and in running order before the arrival of the schooner with its crew.

Meanwhile our parents at home had taken an interest in all this, and what became known as the Cleveland Manual Training School was ere long erected, in which we embryo carpenters progressed to a course of wood turning with lathes, and a year later to metalwork at a forge — like so many blacksmiths learning to strike when the iron was hot, the best possible cure for youthful indecision. Had not several of us gone to Chicago at this juncture to take the examinations held there for entrance into Yale, — or had we failed to pass them! — well, we might have gone on for another year to design and, with our self-made and well-tempered tools, build an engine, and possibly become mechanical engineers.

Instead of this, we passed much of the next four years, as I have indicated, sweating in the old Gym to qualify for our chosen forms of sport — he as a brilliant halfback on the eleven, I as a mediocre outfielder on the baseball team. And lest anything in my opening paragraphs be construed as disparaging of the life and opportunities here in the Yale of our time, even at the risk of fomenting a debate with the gifted orator of the class which graduated last June, I venture openly to say that "*Those* were really the Days."

After graduation, we had our last long summer vacation together, including still another expedition up the Lakes, and at its end our paths for the first time definitely diverged, he remaining home to get a start in business, I going East to enter a profession which proved so engross-

ing that — until we suddenly and unexpectedly found ourselves become of middle age — I knew only from hearsay of his moving from one position of trust to another in the business life and civic affairs of Cleveland.

His keen mind, good judgment, tact, and understanding made his advice and companionship so widely sought that even in matters having to do with my own profession his activities, from a civic standpoint at least, were of the more lasting value. For he came to take a great interest in community health, and indeed served for several years as Public Health Officer for Cleveland, participating actively in the anti-tuberculosis crusade, in the establishment of fresh-air camps for children, and in organizing a model corps of public-health nurses.

By dint of patience and persuasiveness more than by what is called organizing ability, he could get divergent groups, prone to work jealously at cross-purposes, to compose their differences and pull together. Thus he came to be a potent factor in the early success of Cleveland's Community Chest, which some twenty years ago set an example for similar organizations throughout the country. He served on the Cleveland Health Council, on the Federation of Charity and Philanthropy, on the budget committee of the Community Fund Council, the Municipal Research Bureau, the Children's Aid Society, and on Western Reserve Hospital and University Governing Boards for longer periods than I would venture to say.

Into all of these activities his wife, a most generous, philanthropic, and warm-hearted woman, entered with a zest equal to his own. They now lie buried side by side on the Georgia plantation near Thomasville which, during their lifetime, served as a veritable winter Mecca for countless friends and relatives, who found there the tra-



ditional old-time Southern hospitality revived at its best.

The forest of long-leaved pines in that section of southwestern Georgia remains largely uncut, and in connection with the United States Biological Survey it was developed into a great game preserve, so that the shooting in season was greatly enjoyed. Other interests for both of them lay in the training of standard-bred trotting horses and in developing a herd of prize-winning Jersey cattle whose fine points lay quite beyond my understanding, however ardently they were dwelt upon.

But all this delightful plantation life, which they shared so generously with many, takes us far from the subject of book collecting, and we may make this an excuse to leave the immaculate barns and stables of Pebble Hill and go back with him to the "big house" and its library.

My childhood memory of the "Baskerville-Addison" episode that has already been mentioned is sufficiently vivid for me to recall just where I was sitting that Sunday afternoon on a rather humpy horsehair sofa by a front window while other listeners were sprawled about on the floor — because they chose to take Dr. Holmes lying down, or for some better reason. And whether this occurrence made a similar dent on Perry's youthful cortex I won't presume to say. Quite probably not, for there was nothing comparable of quarto size that I recall among the much-thumbed books at the house where I abode.

To be sure, there was a Webster's Dictionary on a rack in the living room, to be consulted standing, and two giant folios of Shakespeare engravings, probably the gift of a grateful patient of my father's, that were parked under the grand piano in our parlor and whose elephantine pages, on occasion, we were permitted to turn, lying prone on our bellies and elbows. I never heard Perry suggest

swapping them for the Addison at his house, or anyone claim they were equally rare. Whatever became of them, unless they somehow accidentally got off in a missionary box, remains a family mystery.

When he began seriously to take an interest in printing, and among other works to collect the products of John Baskerville's Press, I cannot presume to say. He was always a wide and discriminating reader, but Baskerville quartos are hardly bought to peruse, least of all in bed. Still it is scarcely a book collector's motto that "no old book is to be desired save that it may be read."

I do happen to know that he came to join the group of Cleveland bibliophiles called, in honor of Frederick Locker-Lampson, the Rowfant Club. Before this same club that particular Harvey uncle in whose barn, as I have told, there originated, out of some carpenter's benches, what finally grew into the University School of Cleveland — that Harvey uncle, I had started to say, once read a paper on the life of John Baskerville which appears among the Rowfant Club publications.

So it came about that, while the whirling spindle of our lives spread widely apart as we became of middle age, we always found an unending source of reminiscent interest in the years of which I have endeavored to give a brief picture, when the threads were closely intertwined. And I am happy to say they began again to draw together in later years, through a common interest in the perusal of sales catalogues and in the collecting of books.

His was truly a happy and useful life; and when it so abruptly came to a close on that sunny May morning four years ago amid surroundings he so greatly loved, with magnolias, Cherokee roses, camellias, and sweet-scented tea olives still in bloom, while the pink blos-

soms of his favorite thunderbush were just coming into flower, he left behind him not only a fine record of public service but a host of sorrowing friends, both young and old.

A man's individuality is something too elusive to put into words, particularly if he was the sort of person who was never seen out in front, but who always chose to stand inconspicuously at the back of the house, where, with humor and tolerance, he could get a better view of the world's stage. So I shall make no attempt to depict him beyond letting you see his profile in a chance silhouette. It must suffice to recall what someone once remarked of Dr. Johnson, that "no man can be said to put you in mind of him" — even of his shadow.





## XIV

### HALLER AND HIS NATIVE TOWN<sup>1</sup>

THERE stands before me on one of the library shelves of Professor Kronecker's laboratory a row of eight old yellowed volumes, in Latin, and printed as books used to be printed, representing the researches of an eighteenth-century intellectual giant in but one of the many subjects of which he lived to be preëminently the master — Haller's *Elementa Physiologiæ Corporis Humani*, Lausanne, 1757–1766. Does the mention of Bern stir up associations other than of a Bärengaben, quaint old fountains policing picturesque arcaded streets, and a distant view of the Alps? These are well enough in themselves, although not particularly appropriate topics for a letter purporting to be medical, while Albrecht von Haller is essentially so. Here

<sup>1</sup> The essay on Haller, written from Bern during Dr. Cushing's first trip to Europe, represents his earliest excursion into the field of medical humanism. It was printed in a weekly, *American Medicine*, for October 5 and 12, 1901 (Vol. 2, pp. 542–544; 580–582). Since Dr. Cushing was in Europe at the time, he did not have opportunity to read the proofs. There were many typographical errors, and the author later recorded indignantly in his own copy that the editors also used their prerogative with unhappy results. The present text of the essay is given with revisions which Dr. Cushing made in 1928 when the essay had been submitted for publication in *Consecratio Medici*. It was later omitted from this collection because of its length. Two illustrations, one of Haller from an old miniature and another a photograph of the house in which Haller died, are omitted from the present reprinting.

J. F. F.

he was born and here after a long absence, returning with characteristic Swiss longing for his *Heimatland*, he passed his later years in spite of urgent offers of positions from almost every country where science was known.

Aside from the modest tablet erected by his descendants on the house where he died and a pitiful little bronze bust which, hatless and wigless, stands shivering in the Botanical Garden, there is no public reminder of the great Swiss naturalist and physician; no monument calls to mind that here was his home; his burial place is unknown or forgotten; his great collection of books, which he wished to leave to his native town, sold to the Austrian Government and distributed among the libraries of Padua, Milan, and Pavia. For those of our profession, nevertheless, reminders enough of him will be encountered, and that a medical letter *aus Bern* should fail to gain its chief inspiration, or excuse, from a glance at his history would be unnatural, though the story be cursorily told and already familiar.

Born of an old Swiss family on the 16th day of October, 1708, Haller lived to bridge with his years the greater part of the century, — the Haller, Hunter (1728–1793), and Morgagni (1682–1771) century of medicine, — and he employed from beginning to end the threescore and ten allotted to him with a degree of intellectual industry and productiveness almost incomprehensible. He once compared the unceasing activity of his thoughts to a swarm of bees about his head, and certainly the intellectual honey which they stored in his orderly cerebral cells became colossal in comparison with the relatively empty hives of those of us whose mental processes bear less resemblance to the behavior of Dr. Watts's immortal insect.

As a child Haller showed the not infrequent association

of ill health and a remarkably precocious mind, and before he had reached the mature age of ten he had become the author of a Chaldee grammar, a Greek and Hebrew vocabulary, a collection of Latin metrical verses, and biographies without end. During the next few years appeared translations from his favorites, Horace, Ovid, and Virgil, and soon an epic poem of 4000 lines on the origin of the Swiss Confederation; his youthful contemporaries meanwhile were presumably disporting themselves in the Aare, or, at the other end of the year, sledding on the Gurten. It is said of him in some old brochures, which have luckily come to hand, that these youthful productions, at one time rescued at the risk of his life from a fire as his most precious belongings, were later consigned to the flames by his own hand. He was then only twenty-one, and withheld from this cremation only two or three poems as worthy of preservation.

What an uncanny, little appreciated, and much misunderstood *Wunderkind* such a one must have been! Little wonder that his subsequent great fame should have come from the appreciation of other lands, and the knowledge of it as something of a shock to his fellow burghers, to whom he remained a riddle to the end. *Der Prophet gilt nichts in seinem eigenen Vaterland* was a maxim made expressly for Albrecht von Haller.

What a different boyhood had John Hunter, the other great figure in medicine of the century, whose early years were spent in playing truant from school for the sake of country amusements. You remember that Hunter is said to have replied to the disparaging criticism of an opponent, "He accuses me of not understanding the dead languages; but I could tell him that on the dead body which he never knew in any language dead or living." Therein, it seems,



lies the chief difference between these two great physiologists — the one scholar and physician, the intellectual genius; the other “John Hunter, surgeon,” from the fault of his neglected youth remaining only the genius he was born. Still, may it not have been because of such a boyhood that he remained a genius, his youthful gray matter not having been grooved by misdirected pedagogic furrows?

When only thirteen years of age Haller lost his father, and the following year he was sent to Bienne to be under the tutelage of a certain Dr. Neuhaus for the furtherance of philosophical studies, presumably as an introduction to a life work in theology. He must have been an uncomfortable pupil, and doubtless the inquisitive boy's questions often staggered the learned preceptor, whose efforts were directed toward restraining the precocious development of his charge. Though during this sojourn there was awakened for the first time an interest in scientific pursuits, the lad seemed to have had little liking for Bienne. In the old Stadtbibliothek here in Bern I have been allowed to look over some of his personal journals and account books there preserved. One has a sensation of guilt, and would apologize for trespassing on such pages, even though the author be one hundred and thirty years dead.

The Bienne diary, however, begun in French (evidently the youth who wrote Greek and Hebrew and Latin at ten was here making his first essay in penning a language he must have learned to speak at home), is written on the blank pages of a fine old decorated *Schreibkalender*. Here appear his daily entries under the heading of *Réceu* (which later becomes *Reçu*) and *Dépense*. The *dépense* columns are largely filled with *perdu au jeu* and *une bouteille de vin*, with only an occasional domestic expenditure as for

*une paire de bas blancs*, and under the opposite heading a rare *gagne au jeu*, usually for a few *Batzen*, while the losses were in larger figures. Apparently the picturesque environs of Bienne appealed little to the youth who a few years later was to become the pioneer tourist of the Alps, and though he continued to write and study much, the entries show that inspiration was lacking. Under *Muses* one finds *Septembre — Rien*, *Octobre — Rien*, as though rebuking himself for not producing more, in spite of the fact that at this time he wrote his great epic poem and many translations from his favorite classics.

The particular *Tagebuch* from which I am quoting ends with the few months passed in Bienne and apparently also with his ill luck, as may be gathered from a description of the journey on foot to Tübingen, where he was to obtain his first taste of medical studies. *Le 3 Dec. 1723, je part pour Tübingen* — and the boy's *reçu* column immediately lengthens, not only with gifts *de ma tante et de ma mère*, but especially from *gagne au jeu* and *de même à Königsfelde*, where he had to pass one night and on the next day *encore* and again another. It must have been a profitable journey.

A year only was passed in Tübingen, where the boisterousness of his fellow students so repelled him that he subsequently said he never afterward could enjoy wine; and in 1725 we find him in Leyden working in anatomy under Albinus and soon to be the pupil of the illustrious Boerhaave. Unrivalled days these were for the University of Leyden under this "modern Hippocrates," whose reputation as a clinician was no less world-wide than his fame as a teacher; and in those days the world was still really wide. From all lands came pupils — from China even; and Peter the Great, there ostensibly to learn shipbuilding,

did not fail to attend Boerhaave's lectures. The one note missing in what was to be Haller's greatness is that he did not become a great teacher, did not become responsible for renowned personal disciples, founded no great school, as he was capable of doing, and lived as an example of the concentration of learning in the individual. How different with Boerhaave, who, though possibly possessed of less extraordinary mental capacity, yet could diffuse knowledge, and whose influence was the guiding star of many great followers: even John Hunter, who drugged himself before undertaking his lectures, to such an extent did he dread and dislike them, and yet who could count Jenner, Abernethy, Cline, Astley Cooper, and others among his pupils. How different with some of the great moderns like Carl Ludwig, whose disciples before his death filled countless professional chairs in universities the world over.

When Haller — as yet only in his nineteenth year — had finished with unusual distinction his studies in Leyden, a twelvemonth was passed in a medical tour through England, following which he studied topographic anatomy for a time in France under Winslow, of foramen fame, but was obliged ere long precipitately to flee from Paris to escape arrest for secreting and dissecting cadavers in his rooms.

A year was then passed in Basel in the study of what became a new passion, higher mathematics, to which he devoted himself with such zeal as almost to undermine a constitution already not of the strongest. For this indirectly we have possibly much to be thankful, since it was the occasion of enforced trips to the mountains that resulted in awakening his interest in the botanical pursuits which were to add especial renown to his name and to inspire the best



of his poetic efforts. His celebrated *Die Alpen* was written at this time.

In the following year he returned to Bern to become a *praktischer Arzt*. And such a one! An all-devouring reader, as may be judged by the enormous number of bibliographical references appended to all his writings, it is little wonder that people whose standard of mental industry was their own tapped their foreheads, and that patients were shy of the young physician who became lost in an ancient volume while sitting at the bedside and who read day and night, at meals and on the street, on foot and on horseback — in fact, at all times and everywhere. Six years were thus spent in continuous medical study and investigation, his hours of relaxation being largely devoted to the completion of his botanical collection and to the writing of his great work on the Alpine flora, for which most extensive trips were made into all parts of Switzerland. One can hardly over-estimate the influence of Haller when seeking an explanation for the present-day universal interest and affection for these most glorious of mountains — the Swiss Alps. Had he been responsible for nothing more than the first awakening of appreciation for their beauties and grandeur, he would have been entitled to enduring fame — the unwitting pioneer of all modern Alpine clubs.

But at home recognition of the young man's capabilities came slowly. The chair of classical literature in the local academy was refused him, as was also the position which had become vacant as one of the six physicians to the old Inselspital (of which more anon), his previous application for a classical appointment apparently being sufficient evidence of his unfitness for a medical post. Not so abroad. He was rapidly becoming the prophet for other *Länder*

*und Leute*. The first edition of his poems, which he had allowed to be published in 1732, when he was only twenty-five, and of which he lived to see a score of subsequent editions, had been translated into many another language and had been received with enthusiasm. In the scientific world his botanical works and early publications in anatomy and physiology had placed him in the front rank, so that his call by George II to fill the chair of anatomy and botany in the newly established university of Göttingen seems but a natural sequence.

In Göttingen, therefore, the next seventeen years of Haller's life were passed, years of most extraordinary mental activity, as may be judged by a review of his publications during this period — in anatomy, physiology, chemistry, botany, and countless subjects relative to general medicine; for subjects then went arm in arm in the curriculum, to be expounded by one great master, which today barely touch finger-tips across the semesters.

In addition to the enormous duties thus pertaining to his chair and to his researches in physiology and botany, Haller not only continued his youthful poetic habits, but for various scientific journals (one of which he established in Göttingen) is said to have contributed 13,000 articles relative to almost every branch of human knowledge. He established the great Botanical Garden, founded scientific societies, took an active part in religious matters and established churches, published his five anatomical works with their famous plates, as well as his celebrated commentaries on Boerhaave's lectures, and I know not what else. The renown of Göttingen University in these few years blossomed under his mighty impulse.

But through it all there seems to have been "longing for Switzerland — for home," and in 1753, when only

forty-five years of age and in the prime of his renown, raised to the nobility by Francis I, made the *Leibarzt* of the King of England, sought by Frederick the Great as his companion at Court, made president for life of the Royal Scientific Society, elected a member of nearly every philosophical and scientific society of the world, Haller resigned his chair and, in the face of most strenuous endeavors made to retain him, returned once more to his native town. Here in Bern for the next twenty years, indeed almost to the day of his death, the same amazing intellectual activity which had distinguished the Göttingen days was continued. Elected by his fellow burghers, apparently with some reluctance, to the office of *Ammann*, he discharged the most diverse duties relative to matters of state with untiring devotion. Appointed chief public-health officer against the plague of Rinderpest and also against another plague, that of "natural healers" (*Selbst aufgeworfene Leibärzte*), which then infested the country; for six years the director of a great salt industry; founder and promoter of the bureau of public economy, of a philological seminary, of the state orphan asylums — he served, in short, upon almost every important commission, religious, judicial, educational, or philanthropic, which was appointed by the State.

And yet during these years appeared this extraordinary work on physiology to which I introduced you, with its wonderful bibliography so full of references that he has been accused of a lack of originality, and many people have considered the work to be largely one of compilation. In reality it is so full of original observations that it has been stated that, should the discoveries be collected which have been rediscovered since the time of Haller, they would by themselves fill one of these quartos.



The volume, however, which gives the deepest impression of the great learning of the man is his History of Medicine, behind which one scarcely needs to go in the search for medical literary references. You well know the book, *Methodus Studii Medici*, with its fine old steel plates, dedicated to *Hermannii Boerhaave, viri summi, sui que præceptoris ab Alberto Haller*, published in Amsterdam in 1751. It covers the literature of Forensic Medicine, of Surgery, of Dietetics, of Pathology, Anatomy, Botany, and Pharmacy, with an *index auctorum* and *index rerum*. It is the *Index Medicus* from the earliest manuscripts till the middle of the eighteenth century; and this volume, published during the Göttingen days, was but the forerunner of the enormous bibliographical works, three of which, in Anatomy, Surgery, and Practical Medicine, he lived to complete and publish in Bern. Aside from these great works of reference and the hundred or so original monographs on physiological and anatomical subjects, many other scientific papers, botanical, geological, and mineralogical, were published, as well as papers dealing with moral, political, theological, and educational questions. The man's capacity for learning was beyond measure; he absorbed everything he read; could utilize it to abet his keen personal observations, and seemingly never forgot.

It is interesting to read between the lines of some of the *Tagebücher* of this late period and see what type of man he was behind the scenes. Indeed it is easier to read *between* than the lines themselves, since with the years illegibility came to distinguish his half of the pages of the old almanacs whose printed sides contain, in old Gothic type, eighteenth-century *Moralische Gedanken* and signs of the zodiac and notes on time and tide, as a proper almanac should. Here

are some of his expenses for one of the years, all carefully itemized under the various headings of *Reisen*, 228 (presumably the figures refer to the old Thaler, and it must have been an especial year for Alpine tours); *Bücher*, 95 (not so much as in other years, for they usually exceeded other items); *Presenten*, 108 (generosity); *Meubles*, 85; *Kleider*, 64 (rather small compared with Mr. Pepys a hundred years before. Do you remember his lament that he had expended but sixty pounds for his own raiment during the twelve months, whereas Mrs. P.'s had cost him a full twelve?); *Arme*, 26; *Kinder*, 41 (thrice married, there were several of them — an inexpensive luxury); *Holz*, 50 (the "rigorous" climate of Bern). And so on. There are also considerable sums under *Botanie*, for plants from so and so, and the pathetic entries under *Anatomie* where we can best read between the lines. *Eine arme Mutter für zwei gestorbene Kinder*; *Zwei Kinder begraben*; *Noch eine Mutter*, and so on.

Then there are his domestic notes, and at the end of the book his list of correspondents, which was large; letters written and received from Linné, whose classification Haller never adopted and yet who named one of his species after his friend and opponent; from Voltaire; from the celebrated Tissot of Lausanne; from Bonnet — from English, French, Germans, and Italians. In the Stadtbibliothek are gathered some sixty-seven great volumes of the correspondence of these later years. Long epistles they were. Letter writing had not yet come to be among the lost arts; chirography, however, already had, and much of the correspondence defies deciphering.

All this has been little more than a bare enumeration of some of Haller's activities, and no mention has been made of his three great philosophical novels, of the crowning



compliment of his life, the visit of the Emperor Joseph II, who found him in his library infirm, — it was but a few months before his death, — but still surrounded by books and manuscript, over which he worked till the last.

But what of the Bern of today, a century and a half since Haller's return from Göttingen? Though, as I have said, no public monument stands for him, this laboratory is a sufficient one, and here his name is revered; the Physiologisches Institut goes by the name of *Hallerianum* and a bronze bust of him who established the principle of irritability of the tissues before protoplasm was known greets the eye on first entering the vestibule. The Institute is modern and completely equipped. For a Continental university, buildings of only twenty years' standing may be considered modern indeed, and during this last score of years there has been an active period of building regeneration in all departments of the Bern Hochschule. The laboratory, furthermore, treasures in the persons of its chief and his assistant the fine traditions of the Leipzig School of Physiology, and above in the assembly room is a bas-relief of Carl Ludwig and a bust of Helmholtz, the two great preceptors with whom Professor Kronecker was so long associated. There is an empty space for a third great modern in physiology. Who could well stand by these two?

The departments of law, philosophy, and theology still occupy, together with the Stadtbibliothek, cramped quarters in the dingy but picturesque group of old cloister buildings (Barfüssler Kloster) in the very heart of the old city. They are soon to be removed, however, to a new site on the highland which borders the Aare and commands away off over the town a superb view of the Bernese Oberland.



This will be the completion of new quarters for all departments, the scientific faculties having been given precedence. Thus our immediate neighbors, the Anatomical Institute, under Strasser and Zimmermann, and on the other side the fine Chemical Laboratory, with Kostanecki in charge of the organic division, are likewise modern, and conform in style with this building. Then in the town proper are the Pharmacological, the Zoölogical, and Mineralogical Departments; the Botanical Institute, with its garden, and in the grounds of the Inselspital the new Bacteriological Institute under Tavel and that for Pathology under Langhans.

It is something of an undertaking for a small state to maintain such educational institutions as one finds in Switzerland: the five universities, at Basel, Zurich, Bern, Lausanne, and Geneva, to which a sixth may be added, the new one of Freiburg. The wisdom of it has been the occasion of much strife. I remember that in one of Billroth's *Briefe*, written to His when the latter was still in Basel and during Billroth's occupancy of the Zurich Chair of Surgery, he discusses the question at length, and suggests that there be established one great central faculty for the philosophical and other departments, leaving the medical schools scattered in the several cities. Their comparatively small populations would for clinical purposes render this advisable. But this seems hardly feasible, as many of the departments dovetail to a considerable extent, and then there is the ever-present difficulty from the diversity of languages. Shall it be a French- or German-speaking university center? As Billroth says, even though the Genfer would have no difficulty in speaking German in Basel, he could not "live French," and vice versa the Berner in Genf. Here would be the chief obstacle. I think many plans have

been proposed, and yet the number of universities remains as before.

Naturally a large part of the student body must consist of the *Ausländer* element. During the past semester here, for instance, in the medical faculty, which department contains about one third of the total number of students in the Hochschule, there were 300 students, of whom 145 were foreigners; of these about 80 per cent were Russians, nine tenths of them being women. Practically this same proportion existed in Lausanne. In Basel alone is the university less dependent upon this foreign element, as, owing to the beneficence of some private persons, it stands on a firm financial basis, and has consequently been able to raise its standard of admission. The new Rector of the Bern Hochschule, Lüdermann, in the face of considerable opposition, has succeeded in establishing a similar standard for matriculation here, and in the future possibly the element from *irgendwo in Russland* will be less in evidence. I do not think that the average intelligence of the medical student body is equal to that of our leading schools, nor do the students seem to take their work with the same degree of seriousness. From what I have seen of them in the clinics, the women, if no better, at all events are the equals of the men, and they certainly seem to approach their work with much less indifference. They are, however, ungraciously ignored by most of the lecturers, *Meine Herren* being the usual introductory form of speech; the considerate *Meine Damen und Herren* I have heard only in this laboratory.

Here in Bern, of course, the language of formalities is *Hochdeutsch*; that of everyday conversation, of familiarities, is *Bärndütsch*, as different a form of speech from the maternal tongue as is Latin from modern Italian. It



is a language of diminutives, spoken with the greatest modulation of pitch both in words and in phrases; essentially a language for children. No one would think of addressing a child other than in the dialect. For example, words like *Fraueli*, *Mannli*, *Bübeli* (boy), *Hüsali* (chalet), *Theeli* (tea), and the like, are readily recognizable. If you ask for a cup of the "little tea," it would be *es Tasseli Thee* or *es Tröpfli Thee*, one diminutive being dropped for the sake of another. The dialect, however, is but little written, and read with difficulty even by the Berners themselves. The Robert Burns of the dialect has yet to appear, though I should perhaps except Gottlieb. It looks curious in print. For instance, the familiar "Perseverance wins in the end," or *Nicht loslassen gewinnt*, would be *Nüd lugglah gwünnt*; or again, *Alle gute Dingeli sy Drüüe*; many an *Umlaut* and diminutive, as you see.

Still, despite their pride in and love for their own dialect, which means to them a national homely speech, no people have a greater *Sprachgenie* than the Swiss. Owing to excellent public schools and to the necessity of several languages for most people in the daily routine of life, French and German are fluently spoken by all, English and Italian by many, though the dialect always remains the language of choice. If all roads once led to Rome, certainly most of them now lead through Switzerland, at some time the *Gastfreund* of all travelers. Naturally the people learn all tongues.

Is Bern a good place for postgraduate study in medicine? Truly the three Americans who have wintered here think so, but it depends, of course, upon the lines of work one desires to follow. Certainly no better leaders can be found than the chiefs in Medicine, Surgery, Physiology, and Pathology, and though the clinical material is natu-



rally less than in some of the great Continental medical centers, nothing seems to me so unprofitable as the usual semester spent in Vienna by the concourse of American students, the signatures on whose diplomas still remember the blotter. It is little wonder that during the past twenty years our medical graduates over here have lost standing as compared with that of a famous band in Paris when the past century was young. No opportunities better than those at home could be offered, and it seems to me that the only excuse which today can be given for foreign study is a shocking need of modern languages and days too full of interruptions to allow time for laboratory work. Presumably there is but one factor which will retard the realization of Dr. Osler's prophecy made last summer in London that the great international postgraduate schools of medicine will ere long be transferred to America: that is the expense of living there. Perhaps this may be instrumental in the end in making for us a good selection of students.

In a quaint old curiosity-shop kept by a still quainter old couple in an out-of-the-way street here in Bern, one may with some trouble find, packed away among a medley of things, books old and new, varying all the way from Gilbert's *Bab Ballads* and *Sandford and Merton* to a fifteenth-century Bible in Latin. From among this collection I secured one day, for a few centimes, an old volume, *Das Inselspital in Bern*, containing a description of the hospital then *neu erbaut*, MDCCXVIII. Over eight hundred years ago, it seems that a certain Frau Mechtild von Seedorf piously founded in Bern, in commemoration of the death of her husband, a Frauenkloster, which came under the care of the Dominican order, and which established itself on a small island in the Aare where the river embraces the

promontory of the old town. The Inselkloster, thus popularly named, passing through many vicissitudes during the centuries, and gradually assuming, as so many other similar institutions have done, the prerogatives of caring for the sick, has come to be the present well-known Inselspital, whose nurses remain *Inselwestern* as were their fore-runners of eight centuries ago. The hospital of today, rebuilt in 1883 on its new site, has lost in picturesqueness what it has gained from the more practical demands of modernity, and here most of the clinical teaching of the university is conducted.

I need say nothing to you of the chiefs. Kocher's daily 8 A.M. clinics (fortunately with the usual leeway of an *akademisches Viertel*) are a treat, and one invariably comes away with much for thought and imitation. They are the more remarkable when one realizes that the hospital contains only ninety surgical beds, with few free ones, and that there is no great feeding out-patient department. It only goes to show the value of a small, carefully organized clinic with a permanent staff. The wealth of material of some of our hospitals at home is such that it swamps the attendants, themselves often a shifting body, unable to catch the details of the kaleidoscopic picture of disease passing before their eyes. The operative work is beyond compare, for the patient and not the bystander, which again is not the case in many another clinic at home and abroad. Such rigorous technique I have known in only one other surgical clinic; one has, in fact, a feeling of surgical security in Bern. And yet the days of the *Scherer und Bruchschneider* are but little removed. Not until 1834 did the surgeons here have their own beds in the hospital, and a century before, in Haller's time, it was necessary for the *Inselchirurg* to show his instruments before operating,



and to unfold his plans to the *medico ordinario*, who passed judgment upon the necessity and propriety of the procedure.

Professor Sahli's daily medical clinics are likewise most excellent, especially noteworthy and interesting being his Wednesday *Theoreticum* or lecture on pathological physiology. His fine book, *Klinische Untersuchungs-Methoden*, now entering its third edition and I believe being translated at home, is everywhere known, of course. Like Professor Kocher, Langhans has held his chair in pathology since 1872, and working under him are always several foreigners whose opportunities must be of the best. The new bacteriological institute is separate from the pathological department, and a certain flavor of secrecy, occasioned by a spirit of commercialism which has arisen from a wholesale manufacture of serum, has seemed to discourage of late years the few men who have desired to do research work there.

There is but one criticism which might be made of the methods of clinical instruction, and that is that the students have seemingly not enough practical work and do not come intimately enough or frequently enough in touch with patients, even during the last semester of their five years of prescribed course. This possibly is excusable in consideration of the relatively small number of hospital patients, and it is a criticism which applies equally to most medical schools.

There are two other large hospitals here, which speaks well for a small town, the large Kantonal Frauenspital with one hundred and twelve beds, where the obstetrical and gynecological clinics are held under Professor Müller, and the old Bürgerspital, which belongs to the citizens of the town, and which is distinguished by having over its



entrance this fine inscription, which is ascribed to Haller:  
CHRISTO IN PAUPERIBUS.

This long digression brings me back to the chief subject of this epistle, and as I began with him, so may I end.

On the old Inselgasse, beside the spot where for a century or two rested the hospital during its peregrination from its early insular existence in the Aare to the present site, stands a house marked with this modest tablet: —

IN DIESEM HAUS  
WOHNTE UND STARB  
ALBRECHT VON HALLER.  
ANATOM.  
PHYSIOLOG. BOTANIKER.  
PRAKTISCHER ARZT  
UND  
DICHTER.  
GEBOREN 1708  
GESTORBEN 1777.

The story runs that with fingers at his wrist he watched the ebbing of his own existence as he had that of many another, searching for the last pulsation in his radial artery. *Der Puls schlägt. Es schlägt noch*, and, after a short time, *Jetzt fühle ich ihn nicht*. The great impulse, however, which was given to scientific investigation through the activities of this extraordinarily versatile and productive man *schlägt noch*.

*Denn wer den Besten seiner Zeit genug gethan,  
Der hat gelebt für alle Zeit.*

BERN, March 20, 1901

## XV

### WILLIAM THOMAS COUNCILMAN 1854-1933

THROUGHOUT his long life Councilman was a man of ardent and generous enthusiasms. It was this quality, combined with his utter informality, which made him such an inspiring teacher for the young and such a delightful companion for both young and old. There was a picturesque ruggedness in his personal appearance, an unexpectedness in his turn of thought, a shrewdness and independence in his observations concerning people, things, and events, that set him apart from the common mould. He had escaped from early educational and environmental inhibitions by which many persons come to be afflicted and subdued. Combined with an utter unconsciousness of self, there was about him a certain sturdiness of mind, frankness of opinion, and honesty of purpose which were no less disconcerting to the self-complacent than refreshing to those who appreciated his outspoken sincerity.

He was born on a busy farm which straddled the Reisterstown turnpike not far from Baltimore, and he always regarded it as fortunate that his early years were passed in such an environment. There he learned to plow, to swing a cradle, to bind sheaves of grain and do other things that were unforgettable, like the gathering of spring simples.

*From "Science," June 30, 1933.*

The very earliest thing I can remember [he wrote in one of his later-year addresses] is being taken by my grandfather when he set out in the first warm days of early spring with a grubbing hoe (we called it mattock) on his shoulder to seek the plants, the barks and roots, from which the spring medicine for the household was prepared. If I could but remember all that went into that mysterious decoction and the exact method of preparation, and with judicious advertisement put the product upon the market, I would shortly be possessed of wealth which might be made to serve the useful purpose of increasing the salaries of all pathologists. . . . But, alas! I remember only that the basic ingredients were dogwood bark and sassafras root, and to these were added *qu. s.* bloodroot, poke, and yellow dock. That the medicine benefited my grandfather I have every reason to believe, for he was a hale, strong old man, firm in body and mind until the infection came against which even spring medicine was of no avail. That the medicine did me good I well know, for I can see before me even now the green on the south hillside of the old pasture, the sunlight in the strip of wood where the dogwood grew, the bright blossoms and the delicate pale green of the leaf of the sanguinaria, and the even lighter green of the tender buds of the sassafras in the hedge-row, and it is good to have such pictures deeply engraved in the memory.

Sent off to school at St. John's College, Annapolis, he left there at the age of sixteen and for the next six years led an independent existence, raised side whiskers, considered himself a very ripe individual, and did pretty much as he chose. That he was always something of a rebel and disinclined to do anything which did not interest him, he in after years frequently confessed. But at the age of twenty-two the determination struck him to follow in the footsteps of his father, a country doctor "who had never lost the childish desire to find things out by observation and the test of experiment."

He entered the Medical School of the University of Maryland, which was no better or worse than most schools



of the period, the two-year course consisting largely of a series of lectures. The dissecting room, however, provided the contact with nature for which he yearned, and the form and structure of the body soon fired his curiosity. Fully to satisfy this, the farm provided an excellent opportunity, and, beginning with the mole, he proceeded to make a comparative study of the skulls of all available animals until the collection finally threatened to crowd him out of his bedroom. So engrossed did he become in this occupation he largely neglected his second-year course of lectures; and it was not wholly a misfortune that one day during his absence a little nephew "with a good business head" sold the whole collection for a few cents to an itinerant bone merchant. This grievous episode, by driving him back to his lectures, made it possible for him to attain, in March of 1878, the degree qualifying him to exercise the art of medicine which he had so laboriously learned for the advantage of the public.

Then something notable happened, and what this was can be best told fragmentarily in his own words, though properly to do so the scene must be shifted and the calendar advanced to 1921, a full forty-three years.

As the Christmas recess drew near, it was noised about in the Harvard Medical School that, on December 19, Professor Councilman was for the last time to conclude his course of lectures on pathology for the second-year class. Entering the large amphitheater to find it packed to the doors by members of all classes, his face became suffused at the burst of applause, and then, abandoning his intended discourse, with his engaging hesitancy of speech slightly more pronounced than usual, he said in effect: —

It is plain to see that you regard this as an occasion marking an epoch in my life, and there is a tendency to regard an epoch as

an excuse for remarks. The three great epochs of life are birth, marriage, and death, and they are often accompanied by certain remarks. At the wedding breakfast many have suffered from these remarks and some of us have made them. The present is a sort of intermediate epoch, and though my talk is usually desultory I may take advantage of the occasion to be even more vague and desultory than usual.

By good fortune someone wrote down his impromptu ruminations, and though they cannot be quoted in full, interesting as that would be, some excerpts will serve to show what it was that happened after his graduation in March of 1878.

I heard that there was at the Johns Hopkins University a new sort of institution called a laboratory. I vaguely knew of the Johns Hopkins University, but not a great deal about it. It had opened in 1876 and Huxley came on to give the opening address; my father drove in from the country and heard this address and he came back and told us what an impression it had made on him. . . . There seems something remarkable about the opening of this University. . . . The men, Martin, Rowland, Brooks, and Remsen, were young men, and as young men they felt no hampering traditions. Traditions may be very important, but they can be extremely hampering as well, and whether or not tradition is of really much value I have never been certain. Of course, when they are very fine, they do good, but it is very difficult . . . ever to repeat the conditions under which good traditions are formed, so they may be and are often injurious and I think the greatest progress is made outside of traditions. So the Johns Hopkins University started without traditions, and started with young men, full of vigor and enthusiasm, as its leaders. The University at its beginning made provision for twenty fellowships, each fellow being paid five hundred dollars; and *the idea of going to a university and being paid for it* made an impression!

He then went on to tell of Martin's permitting him to join his small class in the biological laboratory for the

next three months, and how thrilled he was with the informal spirit of the place and with the method of teaching through observation and experiment. That summer he became assistant to the quarantine officer, bought a cheap microscope with his first small earnings, and began with its aid to study such histological preparations as he could find time to make in the intervals of his routine work. And when, that autumn, Martin offered him the assistantship in physiology for the following year, his cup was overflowing.

For the first paper he ever wrote (an experimental study of inflammation of the cornea) he was given a prize of one hundred dollars, and with this encouragement he might well enough have been tempted to take up biology as a career. But something else proved a greater lure; for during the summer months of the three years since his graduation he had been at work, partly at the Marine Hospital and partly at the Bayview Asylum (the city almshouse and hospital), meanwhile becoming ardently interested in histological pathology. Properly to pursue this subject further, he decided that he must go abroad, which his frugal savings permitted him inexpensively to do.

He could scarcely have gone at a more fortunate time, for almost daily new discoveries were being made and new methods developed. In 1880 German Medicine was approaching its heyday, under the stimulus of the new cellular pathology and the cultivation of pathogenic bacteria, both greatly aided by the increasing use of aniline dyes in the study of tissues and microörganisms. His longest sojourn was passed in Vienna under men who had been brought up in the tradition of Rokitansky. For a considerable time he was with Recklinghausen in the new school at Strassburg. He was working under Cohnheim and



Weigert in their active laboratory at Leipzig when in April 1882 the exciting news was brought of Koch's discovery of the tubercle bacillus. And a year later he is found with Hans Chiari, a man of his own age, whom he had first known in Vienna but who now held the chair of pathology in Prague. From this place, under the date of July 16, 1883, a certain "correspondent," W. T. C., sent off to the *Medical News* an entertaining letter largely given over to a vivid description of the ordinary midday meal served in that part of the world.

So in his final lecture — to which, from this digression, we may again turn — he went on to say: —

I came back from Europe very full of all the things which I had learned and with a more or less definite idea of . . . practising medicine. But I put off later and later the putting up of a sign showing that I was willing to serve, and finally never put it out, because it seemed to me there were so many other interesting things to do. And as long as one saw the possibility of doing these interesting things without actual starvation, there was no question of the choice, and there should never be a question of the choice. I reasoned that if worse came to worst I had a few acres of good land on which I could raise all the food I required and something over . . . but I never had to resort to agriculture for a living. I speak of this because at that time there seemed to be no possibility of earning a living by teaching pathology, and Welch in New York and I were probably the first two men in the country who tried it. I rather think Dr. Welch took the greater risk because he had not my agricultural resources, though a training and mental capacity far greater than mine.

For the next few years after his return from abroad in 1883 he engaged in various tasks, doing the autopsies at Bayview, teaching in the two local medical schools, helping John S. Billings prepare his *National Medical Dictionary*, writing articles for encyclopædias, and for a year

serving as coroner's physician to the City. This position paid him three hundred dollars, but it tied him down too much to places and dates, and being of a rather roving disposition he did not care to be at a certain place at a certain time, so he surrendered the job to another physician who had a greater political pull.

Meanwhile, in 1886 he had joined Welch and the early group of workers in the newly erected pathological laboratory which was to form part of a great hospital still in slow process of erection. And with the opening of the Johns Hopkins Hospital three years later there came another period as remarkable, he believed, as the first period, that of the opening of the University. To prepare himself for this event, in which he was slated to take part, he had gone abroad in 1888 for another year of study; and then, for the two years prior to the establishment of the Medical School, in close intimacy

There lived together in the hospital a group of men, all young, all very good fellows, all working very hard, and all having a very good time. It is an important thing that people should be happy in their work, and if work does not bring happiness there is something wrong; and both at the University and at the Hospital there was that wonderful happiness in work.

All others who shared in that cloistered, carefree, hard-working, and stimulating life in the Johns Hopkins Hospital during those two early years have expressed themselves in similar vein, and there may never be anything quite like it again. Of this "mutual admiration society," as it was dubbed by visitors who had enjoyed its warm hospitality, the acting resident pathologist with the title of Associate Professor was one of the conspicuously unique figures. And it is natural that he should have been among the first of many to be called away by other institutions

which were eager to capture something of the local spirit, hoping that it might prove transplantable.

Accustomed as a second-year student to the formal lectures then in vogue at the Harvard Medical School, the writer well remembers what an impression was made by the addition in 1892 to a somewhat austere faculty of this breezy informal pipe-smoking man, unmistakably sloping toward the sunny side, who was said to have been the first "outsider" ever appointed to a professorial chair in the School. Since he was accustomed to work elbow to elbow with others, those of us who cared to do so and knew enough to take advantage of the opportunity were welcome to a chair and a desk and a problem in his laboratory.

Indelible pictures of him must remain etched on the memory of all who had even casual contact with him in those early days in Boston when mayhap target practice was being held in the laboratory on a Sunday morning. He was a deadly shot for a thumbtack in a plank at twenty paces, and could swear at a golf ball as could few others. He was one of those rare people able without giving offense to punctuate quiet speech with oaths (even when talking to himself); and he depended upon and made considerable fuss over his occasional tippie, preferably of Maryland rye. The growing up, later on, of his devoted children hampered him considerably in the first of these diversions — at least when at home; and what he thought of the Volstead Act and its necessary subterfuge does not bear repeating.

As can be seen from some of the quotations that have been given, he did not always necessarily expect to be taken seriously, particularly when in one of his pessimistic moods, usually precipitated by examples of human selfishness he had happened to observe. But even these occa-



sional outbursts had their amusing aspects, which would make him laugh (and swear) both at himself and at the world. Someone has said that his attitude toward life and its varied experiences was more like that of Mark Twain than of anyone else he had ever known. And, not to misjudge the lessening optimism and buoyancy of his later days, it may without impropriety be said that for sixteen years before his sudden end he had been victimized by increasingly severe attacks of angina pectoris.

But let us return again to the valedictory remarks of the retiring Professor of Pathological Anatomy on that December day of 1921, and we find him saying in conclusion: —

It seems to me that the most important thing for the teacher is to awaken interest and enthusiasm in his students and to provide them with opportunities of following the interest which is aroused, for in this way we progress. Knowledge cannot be given; it must grow and be slowly formed through one's own efforts. It is of no importance whatever to be talked to. I have always rather enjoyed lecturing; I like to talk; and I have gotten, I am sure, more out of the lectures than any of my listeners, because a lecture is often an important discipline to the teacher. It enables him to classify things in his mind; through the lecture he often acquires new ideas. I know that sometimes as I have been lecturing I have seen an unscalable wall rising before the trend of my argument, and I have realized that if I said the next two or three sentences I would run against that wall, and one acquires a nimbleness of wit in finding a way around to the other side. I have enjoyed all that, and I think lecturing is an intellectual stimulus and comparatively harmless to the audience . . . it does not really very much matter what the lecturer says.

During those thirty years of consecutive teaching in a school which profited greatly by his ferment, he engaged in many time-consuming researches; and, much as he

loved to play, when once on a scientific quest he pursued it relentlessly and lived with his problem. While his independent papers deal with a large number of significant and timely subjects, he was more interested in fostering the work of his associates and pupils than in communicating the results of studies carried out by himself alone. Hence, the names of one or more collaborators appear on most of his major publications. Thus his early work on malaria (1885) was shared with A. C. Abbott; his monograph on amoebic dysentery (1891) with H. A. Lafleur; that on epidemic cerebrospinal meningitis (1898) with F. B. Mallory and J. H. Wright; the studies of 220 fatal cases of diphtheria (1901) with F. B. Mallory and R. M. Pearce; a syllabus of pathology for students (1904) with F. B. Mallory; and the several important studies on variola and vaccinia (1891-92) were subsequently brought together (1904) in a monograph under the names of his several co-workers, G. B. Magrath, W. R. Brinckerhoff, E. E. Tyzzer, E. E. Southard, R. L. Thompson, I. R. Bancroft, and G. M. Calkins.

Obviously what fostered the making of the larger number of these conjoint investigations was the opportunity, which contemporary epidemics afforded, of intensively studying the several diseases with which these papers deal; but at the same time sight was not lost of the opportunity for public service to the community in which the epidemics were causing alarm.

On the opening in 1913 of the Brigham Hospital, to which he was appointed pathologist, the scope of his work was greatly enlarged, though at the same time his responsibilities were doubled. The larger part of his time came to be passed in the hospital, and the departmental protocols of the day are models in their thoroughness of detail. The

lengthened number of hours he was obliged to spend in the microscopical study of dead tissues may possibly have served to accentuate — if anything could — his love of the outdoors and his interest in growing things.

Disturbed by the architecturally unadorned exterior of the new hospital, he personally selected, planted, and during his odd hours cultivated the well-chosen varieties of rambler roses that still surround it; and, when so engaged, nothing gave him greater delight than for passers-by to mistake him for the official gardener. He had a gift for making things grow and was forever planting and tending shrubs and flowers somewhere. One of his chief joys was the Arnold Arboretum, and his knowledge of every shrub and tree in that marvelous place was scarcely exceeded by that of his greatly admired friend, Charles S. Sargent, the Director. The horticultural interests now shown by certain members of the hospital staff of those days can probably be traced to the Sunday morning rambles in the Arboretum, or elsewhere through the country, in company with Councilman and Pasco, his devoted bulldog, who scarcely ever left his side.

By nature a close observer, this quality was further developed by the exercise of his profession and it was inevitable that he should look about him with greater keenness and more curiosity than most persons. Though a wide and discriminating reader, what he saw with his own eyes he questioned and interpreted in his own terms. He was, in its broad sense, a naturalist, and all things interested him. Two unusual opportunities came to him to gratify his fondness for travel and desire at first hand to study the unfamiliar flora of other regions. In 1916, he accompanied the Rice Expedition to the Amazon; and two years after his retirement from Harvard, having been invited tempo-



rarily to join the staff of the Pekin Union Medical College, he took advantage of this to go around the world. He had a gift of description and was a most facile writer of highly entertaining letters, which, usually undated, he would dash off on the sheets of ruled yellow paper which he kept ready at hand.

It might be supposed, by the unthinking, that those whose chosen occupation is the study of disease and death would in time become callous and indifferent to life. On the contrary, it is more apt to lead to an abhorrence of suffering of any kind and to a peculiar tenderness toward living things. In his difficult and often baffling search for the cause of disease by the examination of the dead body, by the microscopic study of the tissues, and by the experimental reproduction of its processes in lower animals, the pathologist is laying the foundation on which its recognition, alleviation, or possible cure by physician or surgeon during life is alone possible. It is a task requiring optimism, patience, intelligence, and self-sacrifice of unusual degree. And, to show what outlet a pathologist may have, this inadequate tribute to one of them may well close with an allusion to something else.

On relinquishing his chair, and with it his hospital position, Councilman merely shifted his attention from the diseases of man to those of plants, and his last printed paper, issued from the Arnold Arboretum, was the result of a microscopic study of the relation of the fungi of its essential humus to the root system of *Epigæa repens*. As befitted its place of publication in the *Proceedings of the National Academy of Sciences*, it was a detailed presentation of a novel and little-studied subject couched in scientific terms. But it was characteristic of him that he could not leave the trailing arbutus without unburdening him-

self in regard to its "fatal gift of conspicuous beauty," even though his feelings must be relegated to the footnote in which he says: —

The *Epigæa repens* is one of the most beautiful and interesting of plants. Its blossoms, which are among the earliest of the spring flowers, are white or pink with a waxy texture and a delicious spicy odor and are borne at the extremities of the stems. The pale green hairy leaves, and the pale pink or green stems streaming from the center close upon the surface of the soil, add to the attractiveness. The environment of dead brown leaves, mosses, and low plants give a perfect setting. It is unfortunate that these wonderful qualities should be those which are ensuring the destruction of the plant. Large quantities are gathered in the spring and hawked around the city streets, the unfortunate city dwellers seeking to satisfy atavistic and misunderstood yearnings for woods and green dales by purchasing the bunches. . . . The automobile, by rendering remote places easily accessible, has contributed greatly to its destruction, but the most powerful agency is the commercial exploitation, which is ruthless, and the traffic of great extent. Where the plants are abundant a family even selling them at wholesale can often earn twenty-five dollars a day . . . but the plant is of slow growth, and the relation of leaf and root is so finely adjusted that recovery after considerable loss does not take place and the stimulation to effect new growth cannot act on the plant and the fungus at the same time. By great care and skill, plants can be transferred to other suitable localities and may even be propagated by seed, but there is little prospect of its ever becoming a garden habitant. . . . I have known it to disappear completely from localities where formerly common, and probably no plants can now be found within a dozen miles of any of the large cities. This desire to save the plant is not a mere matter of sentiment. No plant is more suitable for . . . awakening in children through its study the all-important wonder and curiosity. . . . Apparently, like all wild beautiful things which man covets, it must go, but the loss of such things is a serious loss for man.

Thus Councilman went through life observing, studying, recording, and speculating on things small and on

things large, but always with consuming interest in the quest that engaged him, and living up to his maxim that the chief happiness lies in work. When uprooted from his warm and fertile Maryland soil and transplanted to the rugged shores of Puritan New England, there must have clung to him some of the "essential native humus" which guaranteed more than a precarious foothold. Though "deeply engraved on his memory" was the bursting springtime of his boyhood home, he came to appreciate no less the beauties of a slower year's awakening. So it is suitable to leave him engrossed in the study of the tiny Mayflower, and vigorously championing its right to survive.



## XVI

### THE MAYO BROTHERS AND THEIR CLINIC

THERE was nothing mysterious or supernatural about this twentieth-century Lourdes at whose doors incredible numbers of the lame, halt, and blind have for years been daily delivered from the ends of the earth. Nothing supernatural — unless possibly the flawless, lifelong devotion of two brothers for one another be so regarded. Not since the somewhat mythical attachment of those fifth-century physicians, Cosmos and Damian, both of whom in due time came to be sanctified, has there been anything quite like it.

Rochester, Minnesota, fifty years ago, then scarcely on the map, was a prairie town near the headwaters of the Mississippi where in a humble way, at St. Mary's Hospital, the Clinic had its beginning. It was, to be sure, a Catholic foundation in which Sisters of Mercy doubtless prayed for the recovery of their patients. But it was not primarily for prayer, however efficacious, that the afflicted as by a magnet came to be drawn to that particular shrine.

It was rather the world-wide reputation of two forward-looking men whom I like to remember as they were thirty years and more ago, young and vigorous; each blessed with rare surgical judgment, each with hands which seemed possessed, in an emergency, with an uncanny

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ability to do, unflustered, just the right thing at the right moment.

At this shrine there was plenty of ritual, to be sure, but it was the ritual of the well-drilled, silent operating room where for every movement there is a reason; where the incense in the air is not to conceal corruption but to produce painless sleep; where the water in which gloved fingers are dipped is holy only because it is sterile.

Their father, the senior Dr. Mayo, pioneer and Indian fighter, was still alive when I first came to know the place in its early simplicity. There were then but two operating tables, at one of which "Dr. Will" officiated, at the other in an adjoining room "Dr. Charlie." They were thus affectionately differentiated by everyone — staff, patients, employees, and fellow townspeople — not to mention the countless visiting doctors who even then were wearing a path to their door.

For these also soon came from all parts of the world, often by special trains, to see for themselves what modern miracles were being performed daily in this once obscure country town. To what they could learn and carry away for their own use they were more than welcome, for our profession has no trade secrets. The more widely knowledge can be disseminated, the better for everyone.

And so, as the years slipped rapidly by, a great tower of healing, known everywhere as the Mayo Clinic, was finally erected — a living memorial to a great idea, not a mere place of worship for tradition dead and gone, like the Basilica of SS. Cosmos and Damian built some fifteen centuries ago in Rome by Pope Felix IV.

Another contemporary pair of no less self-effacing brothers — Wilbur and Orville Wright of Dayton, Ohio — were also at about the same time dreaming dreams of

a different sort that in no less spectacular fashion came likewise to be fulfilled. Like the Mayos, they seem to have imbibed in their youth the flavor of the old Northwest Territory where the offspring of the early settlers were reared to think more highly of serving mankind than of helping themselves.

One is led to wonder whether imaginative visions of such kind are not more likely to occur and be more possible of realization for those who live where horizons are broad than for those cooped up in metropolitan centers where, even could the rising or the setting sun ever be seen, there would be no time to stop and commune with it.

Different as W. J. and C. H. Mayo were from each other, I have always felt that there was something Lincolnesque about them both. It was shown not only by their modesty and self-effacement, but by their shrewd appraisal of other people in whatever walk of life; and also by their quiet, dry sense of humor. About this there was nothing boisterous, but I have known them to save, with Lincoln-like readiness, many an awkward situation by an appropriate story more often turned on themselves than otherwise.

Lincoln of course was pitchforked out of his native environment in the old Northwest into a position of responsibility he could not refuse. So the Mayos were ready to serve when called, as they did during the War; but they very much preferred their own countryside with its comparatively simple life, despite the ever-increasing responsibilities and laborious routine of their professional work. They felt only an amused pity for those who thought they were wasting their talents in a small town and who ventured to offer them positions elsewhere of supposedly wider influence.

W. J. once said to me, "When Charlie gets so busy on



his farm he forgets to have his shoes cleaned, he takes a night sleeper to Chicago knowing that he will find them well polished under his berth in the morning." Had he been encountered by some traveler on the train who with Midwest informality asked his occupation, he would have replied, "A Minnesota farmer." Had Dr. Will been similarly asked who he might be by some chance companion, he probably would have replied: "I'm C. H. Mayo's elder brother."

After Charlie's death, their friends knew the separation could not be for long. There is a tradition among surgeons that they are likely to meet their end by the same malady in the treatment of which they have themselves specialized. So it was entirely consistent that "Dr. Will" when nearly eighty should calmly submit to an operation whose difficult technique he had not only perfected, but countless times had successfully carried out on persons of younger age who still survive to bless him.

The modern world is all too accustomed to gauge success in terms of net income, and thus measured the returns from the Mayo Clinic exceeded the dreams of avarice; but when in 1915 the Mayo Foundation was established Dr. Will simply stated: "We never regarded the money as ours; it came from the people and we believe, my brother and myself, that it should go back to the people."















